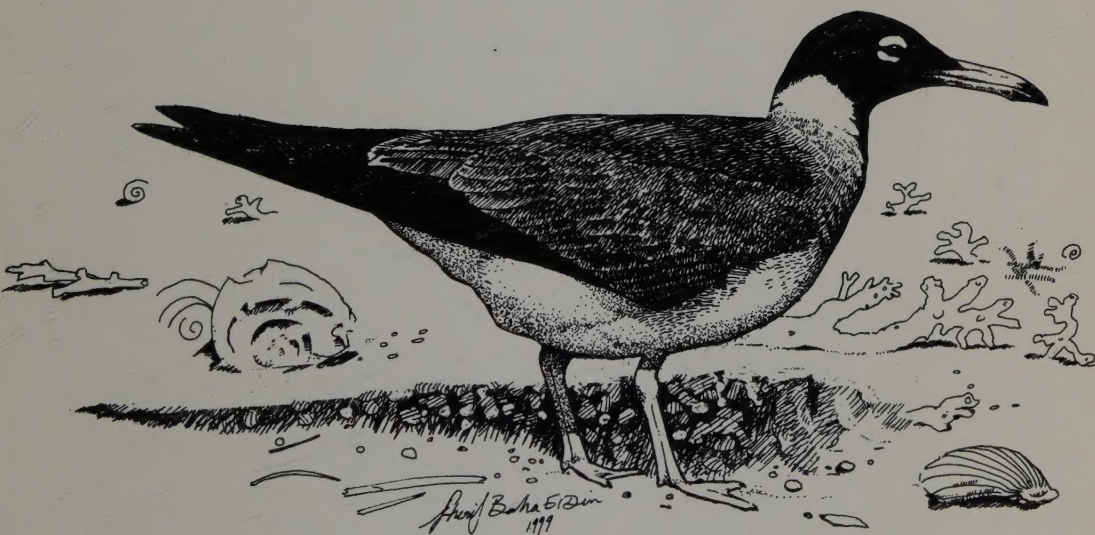


DIRECTORY OF IMPORTANT BIRD AREAS IN EGYPT

BY
SHERIF M. BAH A EL DIN





BIRDLIFE INTERNATIONAL was founded in 1922 under its original name of International Counsel for Bird Preservation (ICBP), and is now a global conservation federation with a worldwide network of partner organisations, representatives and committed individuals.

BirdLife seeks to conserve all bird species on earth and their habitats and, in this way, it works for the world's biodiversity. The organisation recognises that the problems affecting birds, their habitats and our global environment are inseparably linked with social, economic and cultural factors. The threat to bird populations, therefore, can only be resolved if human societies function in an ecologically sustainable manner and if the needs, welfare and aspirations of people form a part of all conservation action.

Birds provide BirdLife with a uniquely valuable focus: they are sensitive indicators of biological richness and environmental trends and fulfill many key ecological functions; they are an important economic resource; and they have inspired and delighted people of many cultures for centuries, which makes them excellent ambassadors for the promotion of conservation awareness and international collaboration.

Birdlife International pursues a programme of:

- **scientific research and analysis** to identify and monitor worldwide the most threatened bird species and the most critical sites for the conservation of avian diversity;
- **advocacy and policy development** to promote the conservation of birds and biodiversity through sustainability in the use of all natural resources;
- **field research and country conservation programmes**, ranging from community-based land-use and management projects to species-recovery programmes benefiting both wildlife and humans;
- **network and capacity-building** to expand and strengthen the global partnership of conservation organisations and to promote worldwide interest in the conservation of birds and the wider environment.

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BY
SHERIF M. BAHÄ EL DIN

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CONTENTS

ACKNOWLEDGMENTS	v
FOREWORD	vi
INTRODUCTION	1
IMPORTANT BIRD AREAS	3
<i>Rationale and Definition</i>	3
<i>Goals and Objectives</i>	4
<i>Selecting Important Bird Areas (IBAs)</i>	4
<i>Important Bird Area Categories and Criteria</i>	5
BIRDS AND THEIR HABITATS IN EGYPT	13
<i>Egypt: A Synopsis</i>	13
<i>The Birds of Egypt</i>	13
<i>Egypt's Importance for Birds</i>	14
<i>Avian Habitats in Egypt</i>	14
NATURE CONSERVATION IN EGYPT	18
<i>Conservation Organisations</i>	18
<i>Legislation</i>	19
<i>Protected Areas</i>	20
<i>Contemporary Bird Conservation Issues in Egypt</i>	21
OVERVIEW OF THE IMPORTANT BIRD AREAS IN EGYPT	29
THE FUTURE: AN AGENDA FOR BIRD CONSERVATION IN EGYPT	36
DATA PRESENTATION	38
THE IMPORTANT BIRD AREAS OF EGYPT	39
<i>Lake Bardawil</i>	39
<i>Zaranik Protected Area</i>	41
<i>El Malaha</i>	44

<i>Bitter Lakes</i>	46
<i>Lake Manzala</i>	47
<i>Lake Burullus Protected Area</i>	50
<i>Lake Idku</i>	52
<i>Lake Maryut</i>	53
<i>Lake Qarun Protected Area</i>	54
<i>Wadi El Rayan Protected Area</i>	56
<i>Wadi El Natrun</i>	58
<i>Upper Nile</i>	60
<i>Aswan Reservoir</i>	61
<i>Lake Nasser</i>	62
<i>Hurghada Archipelago</i>	65
<i>Tiran Island</i>	68
<i>Wadi Gimal Island</i>	69
<i>Qulân Islands</i>	71
<i>Zabargad Island</i>	72
<i>Siyal Islands</i>	73
<i>Rawabel Islands</i>	74
<i>Nabq Protected Area</i>	74
<i>Gebel Elba</i>	76
<i>The Abraq area</i>	78
<i>St. Katherine National Park</i>	80
<i>Gebel Maghara</i>	83
<i>Quseima</i>	84
<i>Wadi Gerafi</i>	86
<i>El Qasr Desert</i>	87
<i>Suez</i>	89
<i>Gebel El Zeit</i>	91
<i>El Qa Plain</i>	93
<i>Ras Mohammed National Park</i>	94
<i>Ain Sukhna</i>	96
APPENDIX A: GLOSSARY	98
APPENDIX B: GAZETTEER	98
APPENDIX C: ENGLISH & SCIENTIFIC NAMES OF FAUNA MENTIONED IN TEXT	103
REFERENCES	109

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importance across the African continent. Egypt is one of the first countries in Africa where this activity is being carried out. BirdLife International has undertaken similar programmes for Europe and the Middle East. The resulting documents have proved invaluable in promoting and co-ordinating conservation activities in both

regions, and have provided vital information to decision-makers about conservation needs, filling in the gaps in the knowledge of sites and their requirements. The Important Bird Area Programme is a process and the publication of this book is but a step that will, we hope, guide and facilitate further efforts.



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IMPORTANT BIRD AREAS

RATIONALE AND DEFINITION

Many sites are exceptionally important for the habitats and the ecosystems that they encompass and for the survival of species dependent upon them. The protection of such sites is one way of approaching biodiversity conservation; numerous bird species may be effectively conserved by this means. Patterns of bird distribution are such that, in most cases, it is possible to select sites that support a number of species. These sites, carefully identified on the basis of the bird species and densities that they hold, are termed Important Bird Areas (IBAs). The main function of the Important Bird Area Programme is to identify and protect a network of sites, which may be considered the absolute minimum required to ensure the survival of the species concerned if all other habitat outside the selected sites is lost or degraded.

Birds have shown to be effective indicators of biodiversity in other

plant and animal groups. Thus, although selected on ornithological grounds, the conservation of the IBA network would ensure the survival of a correspondingly large number of other taxa, and is of wide conservation significance.

While IBAs are selected using scientifically defensible, quantitative criteria, the IBA concept is a practical one. Thus, the existing network of protected areas has been taken fully into account. Although Egypt's protected areas were not originally selected with the intention of conserving the country's avifauna, many do hold significant populations and diversity of birds, thus qualifying for IBA status.

Many bird species are, however, not amenable to conservation through a site-based approach and require different treatment. For others, the site-based approach needs to be augmented by conservation measures in the wider environment.

IBA PROPERTIES

IBAs:

- Are places of international significance for the conservation of birds at the global, regional or sub-regional level.
- Are practical tools for conservation.
- Are chosen using standardised, agreed criteria applied with common sense.
- Must, wherever possible, be large enough to support self-sustaining populations of those species for which they are important.
- Must be amenable to conservation and, as far as possible, be delimitable from surrounding areas.
- Should preferably include, where appropriate, existing protected areas.
- Are NOT appropriate for all bird species and, for some, are so only in parts of their ranges.
- Should form part of a wider, integrated approach to conservation that embraces sites, species and habitat protection.

GOALS AND OBJECTIVES

The goal of the IBA Programme is to identify and protect a network of sites, on a biogeographic scale, critical for the long-term viability of naturally occurring bird populations, across the range of those bird species for which a site-based approach is appropriate. In practical terms, the IBA Programme in Egypt aims to contribute to the establishment and implementation of a national biodiversity conservation plan for the country that takes into consideration the conservation needs of birds and their habitats.

This can be achieved through identifying priority sites for inclusion in the National Protected Area Network, or areas of exceptional value to birds where human activities need special

management and regulation to take into account bird conservation needs.

SELECTING IMPORTANT BIRD AREAS (IBAS)

IBAs have been identified and evaluated in consultation with local and international organisations and experts, and in accordance with selection criteria developed by the BirdLife International Secretariat. As far as possible, detailed and up-to-date information has been collated for each of the IBAs identified, both from available literature and from fieldwork. Field surveys have been carried out in regions where potential IBAs had been identified, and/or where insufficient information was available for sites already known to qualify as IBAs.

SPECIFIC OBJECTIVES OF THE IBA PROGRAMME IN EGYPT

- Identify and document globally important sites for bird conservation (IBAs) in Egypt, based on inclusion of threatened species, concentrations of numbers of individuals or species and representation of biome-restricted bird assemblages.
- Promote the conservation of these sites, by informing all concerned parties of the existence and significance of IBAs, including decision-makers at all levels, scientists, non-governmental organisations (NGOs) and the general public.
- Identify threats that IBAs face, and assess the urgency of, and need for, conservation action in IBAs.
- Bring to attention important sites or habitats that are facing imminent destruction.
- Provide decision-makers with thoroughly researched, up-to-date information on the most critical areas for conserving birds and their habitats, and the rationale for protecting them.
- Promote, develop and involve national organisations and contributors, as far as possible, in achieving the programme's goals and objectives.
- Establish a database containing the critical information and the ways in which it can be maintained, updated and made available in-country and to the wider conservation community.

IMPORTANT BIRD AREA

CATEGORIES AND CRITERIA

The criteria used in the selection of IBA sites have been developed by the BirdLife Secretariat and the African IBA Steering Committee after an extensive consultation process with various African and international ornithologists, conservation organisations and wildlife experts. It is the intention that categories of site selection complement each other, although they occasionally overlap. The category and criteria definitions given below are guidelines for the identification of IBAs. They were followed as much as possible, but since definitions of this sort can not cover all possibilities, they were not regarded as inflexible rules. Common sense and the practical objectives of the exercise balanced the need for scientific objectivity and standardisation.

For some of the categories, quantitative thresholds have been used in site selection. Others, A2 and A3, are more qualitative and require only that particular groups of species be present. Some sites are known to meet the quantitative thresholds on the basis of counts of actual numbers, but a few were estimated to do so, for example, from the amount of suitable habitat present. Similarly, for A2 and A3, confirmed data were available for most sites selected, only a limited amount of inference was necessary for a few species and sites.

Each category listed below is supported by an appropriate species list and where necessary, population thresholds. These are based on Collar *et al.* (1994) and Fishpool (1997).

Category A1: Globally threatened species

Criterion: The site regularly holds significant numbers of a globally threatened species, or other species of global conservation concern.

This category refers to species classified as globally threatened with extinction or classified as 'Conservation Dependent' or 'Data Deficient' according to the International Union for Conservation and Natural Resources (IUCN) criteria for threatened status. The last two categories of species, although not strictly globally threatened, are considered to be of sufficient global conservation concern to merit the identification of globally Important Bird Areas. Also included here are species considered to be 'Near-threatened' and 'Conservation Dependent'. All such species are listed in Collar *et al.* (1994) (Table 1).

The words 'regularly' and 'significant' in the criterion definition are intended to exclude instances of, for example, vagrancy, marginal occurrence or ancient historical records. 'Regularly' includes seasonal presence (or longer intervals, if suitable conditions themselves only occur for extended intervals, e.g. temporary wetlands). However, sites that have the potential to hold threatened species, following habitat restoration work or re-introductions etc., are not excluded.

Category A2: Restricted-range species

Criterion: The site is known or thought to hold a significant component of a group of species whose breeding distribution defines an Endemic Bird Area (EBA) or Secondary Area (SA).

TABLE 1. GLOBALLY THREATENED BIRD SPECIES IN EGYPT; ACCORDING TO COLLAR ET AL. (1994)

SPECIES	STATUS
Dalmatian Pelican *	Vulnerable
Marbled Teal *	Vulnerable
White-headed Duck *	Vulnerable
Ferruginous Duck	Vulnerable
Black Vulture *	Near Threatened
Pallid Harrier	Near Threatened
Greater Spotted Eagle	Vulnerable
Imperial Eagle	Vulnerable
Lesser Kestrel	Vulnerable
Little Bustard *	Near Threatened
Corncrake	Vulnerable
Black-winged Pratincole	Near Threatened
Sociable Lapwing *	Vulnerable
Great Snipe	Near Threatened
White-eyed Gull	Vulnerable
Cinereous Bunting *	Near Threatened

* Threatened species which occur in Egypt rarely, as accidental vagrants, or have not been recorded in the past few decades, for which local conservation action is deemed to be of little value at the present time.

This category is for species in Endemic Bird Areas (EBAs). EBAs are defined as places where two or more species of restricted range i.e. with world distributions of less than 50,000 km² occur together. More than 70% of such species are also globally threatened. Also included here, are species for Secondary Areas. A Secondary Area (SA) supports one or more restricted-range species, but does not qualify as an EBA because less than two species are entirely confined to it.

Since there are no bird species of

restricted range occurring in Egypt, and hence no EBAs or SAs, this category is not applicable to the country and there are no IBAs identified according to its criteria.

Category A3: Biome-restricted species
Criterion: The site is known or thought to hold a significant component of the group of species whose distributions are largely or wholly confined to one biome.

This category applies to groups of species with largely shared distributions

of greater than 50,000 km², which occur mostly or wholly within all or part of a particular biome and are, therefore, of global importance. Many of these assemblages occur in places (e.g. deserts) where delimiting IBAs is particularly difficult.

A biome may be defined as a major regional ecological community characterised by its distinctive life forms and principal plant species. More than one habitat type, and therefore bird community, often occurs within a given biome and this is reflected by the set of sites identified. In many cases, the application of the category has been habitat driven; thus, the quality and representativeness of habitat types within sites has determined their selection.

The number of sites selected under this category takes into account both the size of the country and the relative amount of biomes within it. The size of the site is also relevant here; a few, large sites that reflect the distribution of biomes across the country are preferable to many small ones confined to only a part of it. This ensures that a greater number of species are represented per site and takes account of their geographical distribution. Sites are not, however, so large that they are not amenable to conservation and, in some cases, small sites with high population densities may be preferable to large ones with lower densities.

Common sense is used to ensure that a large number of sites, each holding only a few of the biome-restricted species, are not chosen. Some sites may, however, be chosen for one or more species that would otherwise be under-represented, such as those species confined to a relatively small

part of the biome.

Egypt falls within two biomes, the Mediterranean and the Saharo-Sindian. The first is composed of fairly mesic habitats that fringe the Mediterranean coast of Egypt and occupy only a limited part of the country's total area, representing a small proportion of this biome. Only four of the 17 species which characterise this biome are found in Egypt (Table 2). Barbary Partridge, a species characteristic of the biome, has become locally extirpated from Egypt during the past three decades and is therefore not included. In contrast, the Saharo-Sindian Biome is very well represented in the country, occupying the vast majority of its territory. All but one of the 22 species characteristic of this biome inhabit various parts of Egypt (Table 3).

Category A4: Congregations

Criteria: A site may qualify on any one of the four criteria listed below:

- i) Site known or thought to hold, on a regular basis, > 1% of a biogeographic population of a congregatory water-bird species.*
- ii) Site known or thought to hold, on a regular basis, > 1% of the global population of a congregatory seabird or terrestrial species.*
- iii) Site known or thought to hold, on a regular basis, > 20,000 waterbirds or > 10,000 pairs of seabirds of one or more species.*
- iv) Site known or thought to be a bottleneck where > 20,000 storks (Ciconiidae), pelicans (Pelecanidae), raptors (Accipitridae and Falconidae) or cranes (Gruidae), or a combination thereof, regularly pass during migration.*

TABLE 2. BIRD SPECIES CHARACTERISTIC OF AND RESTRICTED TO THE NORTH AFRICAN COMPONENT OF THE MEDITERRANEAN BIOME INHABITING EGYPT

Dupont's Lark	Temminck's Horned Lark
Thick-billed Lark	Red-rumped Wheatear

TABLE 3. BIRD SPECIES CHARACTERISTIC OF AND RESTRICTED TO THE AFRICAN COMPONENT OF THE SAHARO-SINDIAN BIOME INHABITING EGYPT

Sooty Falcon	Pale Crag Martin
Sand Partridge	Blackstart
Lichtenstein's Sandgrouse	Mourning Wheatear
Crowned Sandgrouse	Hooded Wheatear
Spotted Sandgrouse	White-crowned Black Wheatear
Hume's Tawny Owl	Scrub Warbler
Pharaoh Eagle-owl	Fulvous Babbler
Egyptian Nightjar	Arabian Babbler
Bar-tailed Lark	Tristram's Grackle
Desert Lark	Trumpeter Finch
Hoopoe Lark	

This category applies to those species that are perceived to be vulnerable by congregation at valuable or sensitive sites when breeding or wintering or while on passage.

The term 'waterbird' is used here in the same sense as the Ramsar Convention uses 'waterfowl' and covers the list of families as more precisely defined by IWRB (Rose & Scott, 1994). 'Congregatory non-waterbird species' (A4ii) includes both terrestrial species and those families of seabird not covered by Rose & Scott (1994).

The threshold for criterion A4i is 1% of the biogeographic population of a congregatory waterbird species.

Threshold figures are set for all congregatory waterbird species, including those for which none are currently recognised by Ramsar (Table 4 & 5). IWRB has collaborated in generating numeric thresholds from range estimates and from unpublished population data.

This category also embraces bottleneck sites over which migrants congregate, e.g. to cross over land bridges or before gaining height in thermals. Although it is the airspace here that is important, conservation of the land beneath it may be necessary to protect the site from threats, such as hunting or the construction of powerlines. Also

included here are migratory stopover sites, which may not hold spectacular numbers at any one time, but may do so over a relatively short period due to the rapid turnover of birds on passage.

Migratory bottlenecks (criterion A4iv) are sites at which large numbers of migratory birds regularly pass through during certain, usually relatively short, well-defined times of the

year. The concentration of birds at these sites at such times is a consequence of both their geographical location and their local topography. The birds which make the most conspicuous use of such sites (and are, therefore, most vulnerable while doing so) are large soaring species. These include: raptors, storks, pelicans and cranes.

IBA SITE CHARACTERISTICS

A site is, as far as possible:

- Different in character or habitat or ornithological importance from the surrounding area.
- Exists as an actual or potential protected area, with or without buffer zones, or is an area which can be managed in some way for nature conservation.
- Alone, or with other sites, is a self-sufficient area that provides all the requirements of the birds for which it is important and which use it during the time they are present.
- Where extensive tracts of continuous habitat that are important for birds occur, only the second and third characteristics apply. This definition is not applicable to migratory bottleneck sites.
- Simple, conspicuous boundaries such as roads, rivers, railway lines, etc., have been used to delimit site margins, while features such as watersheds and hilltops were utilized in places where there are no obvious discontinuities in habitat (transitions of vegetation or substrate).
- There are no fixed size maxima or minima for IBAs; the biologically sensible is tempered with the practical.



PALLID HARRIER

TABLE 4. NUMERICAL CRITERIA USED TO SELECT SITES FOR CONGREGATORY WATERFOWL THAT OCCUR IN EGYPT REGULARLY (CATEGORY A4i); BASED ON FISHPOOL (1997)

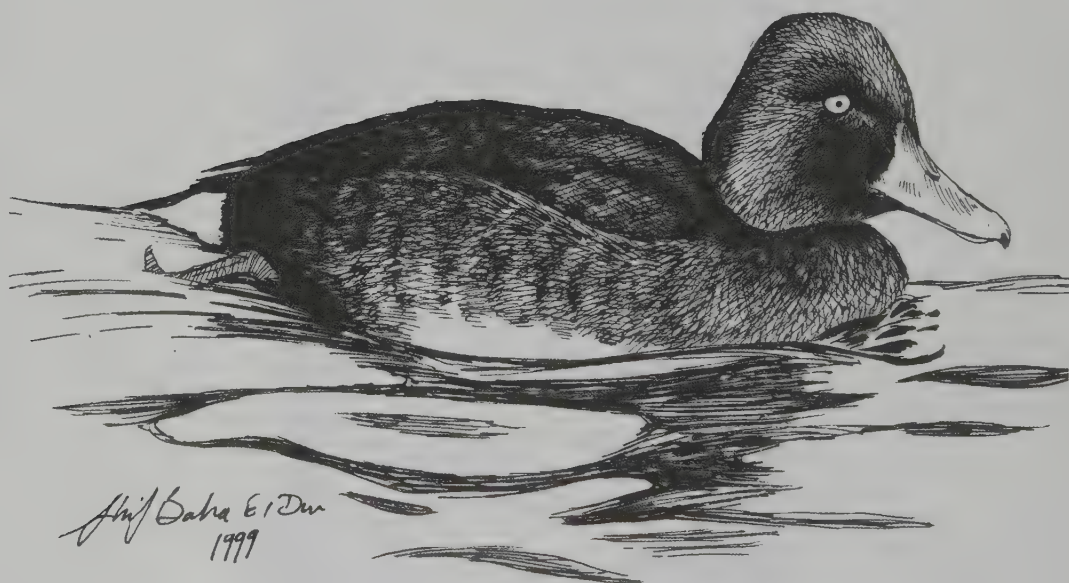
SPECIES	1% THRESHOLD
Little Grebe	1,000
Great Crested Grebe	10,000
Black-necked Grebe	1,000
White-breasted Cormorant	4,250
Shag	2,700
White Pelican	800
Dalmatian Pelican	25
Pink-backed Pelican	1,000
Little Bittern	1,200
Black-crowned Night Heron	1,500
Common Squacco Heron	360
Cattle Egret	2,100
Little Egret	1,000
Reef Heron	500
Great White Egret	120
Grey Heron	3,900
Purple Heron	1,200
Goliath Heron	250
Yellow-billed Stork	500
Black Stork	200
White Stork	4,500
Glossy Ibis	450
European Spoonbill	160
Greater Flamingo	800
Egyptian Goose	3,500
Shelduck	225
Ruddy Shelduck	3,750
Wigeon	18,000
Gadwall	1,300
Teal	14,000
Mallard	83,000
Pintail	12,600
Garganey	20,000
Northern Shoveler	4,650
Marbled Teal	30
Red-crested Pochard	750
Northern Pochard	13,500
Ferruginous Duck	600
Tufted Duck	16,000
Red-breasted Merganser	1,850
Moorhen	10,000
Purple Gallinule	100
European Coot	40,000
Common Crane	2,000
Painted Snipe	1,000
European Oystercatcher	11,000
Black-winged Stilt	700
Avocet	1,100
Crab Plover	300
Senegal Thick-knee	300
Cream-coloured Courser	5,000
Common Pratincole	1,600
Black-winged Pratincole	100
Little Ringed Plover	3,200
Ringed Plover	2,500

Table 4 continued

Kittlitz's Plover	10
Kentish Plover	950
Sand Plover	650
Caspian Plover	200
Dotterel	1,000
Golden Plover	18,000
Grey Plover	1,700
Spur-winged Plover	100
Sociable Lapwing	50
White-tailed Plover	50
Lapwing	70,000
Sanderling	1,200
Little Stint	2,100
Temminck's Stint	3,000
Curlew Sandpiper	4,500
Dunlin	22,000
Broad-billed Sandpiper	400
Ruff	33,000
Jack Snipe	660
Common Snipe	54,000
Great Snipe	300
Black-tailed Godwit	4,200
Bar-tailed Godwit	1,000
Whimbrel	5,300
Curlew	3,500
Spotted Redshank	720
Redshank	3,000
Marsh Sandpiper	300
Greenshank	1,800
Green Sandpiper	10,000
Wood Sandpiper	11,000
Terek Sandpiper	440
Common Sandpiper	15,000
Turnstone	700
Hemprich's Gull	400
White-eyed Gull	200
Mediterranean Gull	5,500
Little Gull	680
Black-headed Gull	65,000
Slender-billed Gull	1,200
Audouin's Gull	390
Common Gull	16,000
Lesser Black-backed Gull	6,000
Great Black-headed Gull	950
Yellow-legged Gull	4,500
Armenian Gull	300
Gull-billed Tern	270
Caspian Tern	150
Swift Tern	500
Lesser Crested Tern	40
Sandwich Tern	2,800
Common Tern	7,800
White-cheeked Tern	3,000
Bridled Tern	5,000
Little Tern	900
Whiskered Tern	1,000
Black Tern	1,700
White-winged Tern	2,300
African Skimmer	100

TABLE 5. NUMERICAL CRITERIA USED TO SELECT SITES FOR CONGREGATORY SEA AND TERRESTRIAL BIRDS THAT BREED OR WINTER IN EGYPT REGULARLY (CATEGORY A4ii); BASED ON FISHPOOL (1997)

SPECIES	1% THRESHOLD
Cory's Shearwater	2,000
Yelkouan Shearwater	225
Red-billed Tropicbird	25
Brown Booby	1,000
Egyptian Vulture	110
Eurasian Griffon	180
Sooty Falcon	10
European Bee-eater	40,000
European Sand Martin	250,000
Barn Swallow	800,000
Yellow Wagtail	460,000



FERRUGINOUS DUCK

BIRDS AND THEIR HABITATS IN EGYPT

EGYPT: A SYNOPSIS

Egypt occupies the north-eastern corner of the African continent, with a surface area of just over one million square kilometres (1,019,600 km²), or about 3% of the total area of Africa (Zahran & Willis 1992). Most of the country falls within the temperate zone, and is situated in the centre of the largest and driest desert regions on the globe. Average temperatures are high (mean: summer 20-30° C, winter 10-20° C) and the mean annual rainfall over most of the country is less than 10 mm.

Perhaps the most significant feature of Egypt's landscape is the Nile River, which is the largest and most important source of fresh water in the country. The Nile divides Egypt into two parts, east and west of the river. Egypt east of the Nile has much relief, including the country's highest mountain peaks; west of the Nile the landscape is generally featureless, largely made up of vast expanses of *serir* and sand desert, dotted with scattered oases.

Egypt enjoys a considerable diversity of habitat, despite its predominantly hyper-arid environment. Lying at the junction of four biogeographical regions, Saharo-Sindian, Irano-Turanian, Mediterranean and Afrotropical, Egypt has a unique mixture of vegetation types, which support a corresponding diversity of faunal elements (Kassas 1993). The Saharo-Sindian elements are well represented in Egypt's vast deserts, while Mediterranean and Irano-Turanian elements occupy fairly small areas along the Mediterranean coast and the Sinai highlands respectively.

Egypt is tenuously connected with sub-Saharan Africa through the Nile River and the Red Sea, along both of which many African faunal and floral elements extend north, adding a further dimension to Egypt's biodiversity. The Nile, with its enormous water resources, supports almost all of the country's major wetlands. Long coastlines on two seas with very different marine ecosystems and terrestrial environments that encompass a wide variety of topographic features, ranging from the rugged mountains of South Sinai and the Eastern Desert (up to 2641 m) to the Qattara Depression (134 m below sea level), contribute to the diversity of Egypt's habitat types.

THE BIRDS OF EGYPT

Avifauna is an important component of Egypt's biological resources; indeed, it is the most diverse and prominent of all of the country's non-aquatic vertebrate fauna. More than 470 bird species are known from Egypt¹, compared with some 110 species of reptiles and amphibians and about 130 mammal species. Most of the bird species found in Egypt are non-breeding migrants, which pass through the country or spend only the winter, and are of Palearctic origin. These wintering and transient bird populations, although not present in Egypt all or most of the time, are an important

¹ Taxonomy and nomenclature at the specific level generally follows the list of African birds provided by Fishpool (1997). Subspecific nomenclature and population information for Egypt is generally based on Goodman & Meininger (1989).

component of the country's biodiversity. Only about 150 species can be considered resident breeding birds, although some of these also migrate further south during the winter.

Zoogeographically, the native (breeding) Egyptian avifauna is fairly heterogeneous. The majority, about 90 species, are of Palearctic affinity, largely confined to agricultural and semi-desert areas. The Saharo-Sindian component comprises about 30 species. There is a fairly strong Afrotropical influence extending from sub-Saharan Africa along the Nile River and the Red Sea coast and mountains (about 30 species, including several generally regarded as pan-tropical). Additionally, there are two Irano-Turanian species and five of oriental affinity. All oriental species were either introduced by man, or are recent colonisers of certain parts of Egypt. Additionally, one species, White-eyed Gull, is endemic to the Red Sea.

EGYPT'S IMPORTANCE FOR BIRDS

Because of Egypt's unique, strategic geographical position along migratory routes of Palearctic birds wintering in Africa, many Palearctic species migrate through Egypt in internationally significant numbers. Many of these migrants congregate at bottlenecks. Soaring birds (such as many birds of prey and storks) are particularly known to concentrate at such localities, but waterbirds also have several migratory bottlenecks in Egypt. Bijlsma (1987) identified the Suez and Hurghada areas as internationally important bottlenecks for soaring birds in Egypt. Zaranik Protected Area (North Sinai) is well

known as an important bottleneck area for migratory waterfowl. In addition, vast numbers of Palearctic migrants winter in Egypt, the most prominent of which are the waterbirds that spend the cold months in Egypt's extensive wetlands in internationally significant numbers. Egypt has an important role in, and global responsibility for, the safe passage and survival of the vast numbers of migratory birds crossing its territory and visiting its various habitats.

Egypt's native avifauna is of moderate significance in terms of global avian diversity. There are no endemic bird species, though there are several subspecies confined to unique Egyptian habitats, such as the Nile Delta and Valley. Perhaps the most important component of Egypt's native avifauna, in terms of global biodiversity, is that of the Saharo-Sindian Biome, composed largely of bird species adapted to life in arid environments, which are either widespread throughout the Egyptian deserts or confined to parts of them. Moreover, there are about 18 species with relatively small world distributions, for which Egypt constitutes an important part of their range.

There are also 16 globally-threatened species occurring in Egypt (Table 1). However, the country is currently of importance for only six of these, namely: White-eyed Gull, Ferruginous Duck, Greater Spotted Eagle, Imperial Eagle, Lesser Kestrel and Corncrake. White-eyed Gull, however, is the most important, for the Egyptian Red Sea islands hold the largest breeding population known in the world.

AVIAN HABITATS IN EGYPT

Egypt offers many habitats for birds,

both transient and resident. The following classification of Egypt's habitats is based primarily on the general habitat preference patterns of the country's most characteristic breeding bird species.

Wetland habitats

Wetlands, as defined by the Ramsar Convention, are: 'areas of marsh, fen, peat land or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine waters, the depth of which at low tide does not exceed six meters.'

Wetlands are some of Egypt's most important habitats in terms of biodiversity (second only to the Red Sea's coral reefs), supporting both the greatest diversity and density of bird species. Most Egyptian wetlands have been degraded drastically during the past 50 years: drained, polluted, over-fished and over-hunted. It should be a conservation priority in Egypt to protect at least representative wetland habitats.

Inland wetlands

There are six major inland wetland areas in Egypt: the Bitter Lakes, Wadi El Natrun, Lake Qarun, Wadi El Rayan Lakes, Nile River and Lake Nasser. In addition, there are many smaller wetlands dispersed in the Nile Delta and Valley, and in oases in the Western Desert. Characteristic birds of inland wetlands include: Little Egret, Little Bittern, Purple Gallinule, Moorhen, Painted Snipe, Spur-winged Plover, Pied Kingfisher and Clamorous Reed Warbler.

Mediterranean coastal wetlands

The most important of these are the six

major coastal lagoons on the Mediterranean: Bardawil, Malaha, Manzala, Burullus, Idku and Maryut. The remainder of the Egyptian Mediterranean coast is of rather limited importance for birds. Characteristic birds of the Mediterranean coastal wetlands include: Greater Flamingo, Kentish Plover, Slender-billed Gull and Little Tern, as well as many of the species characteristic of inland wetlands.

Red Sea coastal habitats and wetlands

These include: mudflats, reefs, mangroves and marine islands. Characteristic species of the Red Sea coast and islands include: Osprey, Reef Heron, Green-backed Heron, Brown Booby, White-eyed Gull, Hemprich's Gull, White-cheeked Tern, Bridled Tern, Lesser Crested Tern, Swift Tern and Caspian Tern.

Many of the islands in the Red Sea, although supporting a relatively low diversity of bird species (fewer than 20) are of global importance because of the internationally significant numbers of the Red Sea endemic White-eyed Gull breeding on them. Jennings *et al.* (1985) estimated that 30% of the world population of this species breeds on the islands at the mouth of the Gulf of Suez. Osprey is a widespread Red Sea breeder; the Egyptian population is considered the second largest in the world after that of North America (Goodman & Meininger 1989). Sooty Falcon is also a prominent breeding species on the Red Sea islands, which hold a large proportion of its small world population. The islands of Tiran, Ashrafi, North Qeisum, Tawila and Zabargad are amongst the most important islands in the Egyptian Red

Sea for breeding seabirds.

Mangroves form a small, but prominent component of the Egyptian Red Sea coastal landscape. They are unique in utilising saline sea water and pioneering the colonisation of muddy shorelines, establishing around them an ecosystem that is totally dependent on the existence of the mangrove tree. Two mangrove species have been recorded along the Egyptian Red Sea coast: Black Mangrove *Avicennia marina* and Red Mangrove *Rhizophora mucronata*. The former is by far the most widespread, Egypt represents the most northerly distribution of this species in the world. The latter occurs sparsely south of Shalatein (23° N) (Zahran 1965). Several species of birds inhabit mangroves and are highly dependent on them in the Red Sea coastal environment. European Spoonbill, Reef Heron and Green-backed Heron are the most prominent.

Desert habitats

Desert habitats cover over 90% of Egypt's territory. The following is an overview of the most prominent desert habitat types in Egypt, from an ornithological point of view.

Coastal deserts

The Mediterranean coastal desert receives the highest rainfall in Egypt (up to 200 mm annually), and has a fair amount of plant cover and the greatest floral diversity in the country. The influence of coastal rains extends up to 60 km inland. Several bird species are largely restricted, in Egypt, to this habitat type, such as: Thick-billed Lark, Dupont's Lark, Short-toed Lark, Lesser Short-toed Lark, Red-rumped Wheatear and Barbary Partridge, the latter now extinct in Egypt.

In contrast, the desert bordering the Red Sea is very dry. The vegetation is typical of that of the Eastern Desert, being largely restricted to the mouths of larger wadis and along the coast, where salt marsh vegetation grows. There are no bird species restricted to this region. The bird communities occurring here are similar to those that are characteristic of the Eastern Desert.

Mountain and wadi desert

Wadis and mountains are characteristic of the landscape of much of the Eastern Desert and Sinai. Mountain habitats are of particular interest since they usually support unique faunal and floral elements. This is true of the mountain massif of South Sinai and the mountains of the Eastern Desert, particularly Gebel Elba. These regions and associated habitats hold an avifauna not found elsewhere in Egypt, and contribute an important element to the country's biodiversity.

Birds characteristic of, or restricted to, mountain and wadi desert include: Barbary Falcon, Hume's Tawny Owl, Sand Partridge, Desert Lark, Trumpeter Finch, Mourning Wheatear, Hooded Wheatear, Blackstart, Tristram's Grackle and Sinai Rosefinch (the last two are confined to South Sinai in Egypt).

Gravel and sandy desert plains (including inland dunes)

Open gravel and sand desert occupy the greater part of Egypt's land area. This, however, is the least productive of the country's habitats. Where rain is regular (as in sub-coastal deserts), plant cover is dispersed regularly over the landscape. In more arid inland regions, vegetation (if at all present) is

scant and largely confined to depressions where sufficient rainwater accumulates or where groundwater reaches the surface (oases).

The characteristic species of these habitats include: Spotted Sandgrouse, Cream-coloured Courser, Bar-tailed Lark, Hoopoe Lark, Temminck's Horned Lark, Desert Wheatear and Brown-necked Raven.

Oases

Oases are perhaps the most prominent features of the Western Desert. They are the only source of water and vegetation over much of this desert, which occupies about two-thirds of the country's area. Most bird life known from this region is confined to or dependent upon oases. The principle oases of the Western Desert are: Maghra, Siwa, Wadi El Rayan, Bahariya, Farafra, Dakhla, Kharga, Kurkur and Dungul. Most of these are inhabited by people and some have been highly modified by man, such as Wadi El Rayan, parts of which have been inundated by excess agricultural drainage water from the Nile Valley. There are also some smaller, largely uninhabited oases dispersed throughout parts of the Western Desert. Birds characteristic of this habitat are: Pharaoh Eagle-owl, Laughing Dove, Hoopoe, Olivaceous Warbler, White-crowned Black Wheatear and Trumpeter Finch.

Oases in the Eastern Desert and Sinai are much smaller than most of those in the Western Desert. They do not completely fulfil the meaning of the term 'oasis', as they are usually well linked with other life-supporting habitats through wadi systems, where they are typically located (e.g. Feiran

Oasis), or on their deltas near the coast (e.g. Ain Sukhna). The avifauna of these oases is similar to those of wadi and mountain habitats.

Arable and urban landscape

Almost all of the cultivated land in Egypt is in the Nile Valley and Delta. This is amongst the oldest cultivated land in the world, and has been subjected to man's manipulation for over 7000 years. Although, today, agriculture has replaced virtually all of the original habitats and vegetation of this region, a good proportion of Egypt's bird species are confined and well adapted to this man-made landscape. The characteristic birds of the Nile Valley and Delta include: Black-shouldered Kite, Common Kestrel, Cattle Egret, Spur-winged Plover, Senegal Thick-knee, Barn Owl, Graceful Prinia, Garden Bulbul, Olivaceous Warbler, European Goldfinch and Carrion Crow.

There are also small areas of cultivation in North Sinai and in Western Desert oases, which are irrigated with underground water. The avifauna of cultivated areas of the Western Desert oases is very similar to that of the Nile Valley. That of North Sinai is an extension of the Levantine avifauna, including species not known to breed elsewhere in Egypt, such as: Sardinian Warbler, Great Tit and Syrian Woodpecker.

Urban centres are mostly concentrated along the Nile Valley and in the Delta, with smaller settlements in coastal areas. The characteristic birds of Egypt's urban landscape are fairly uniform throughout the country and include: Common Kestrel, Senegal Thick-knee, Laughing Dove, House Sparrow and Carrion Crow.

NATURE CONSERVATION IN EGYPT

The interest of the Ancient Egyptians in birds and other wildlife as cultural, religious and food resources is well known and documented (Houlihan & Goodman 1986, Houlihan 1996). Egypt is one of the earliest known civilisations to adopt some form of nature conservation. Ancient Egyptians issued rules or decrees concerning hunting and the treatment of wild animals. Some species were considered to be sacred and were protected, such as the Sacred Ibis and falcons. The killing of sacred species except by lawful persons was punishable by death.

The first modern wildlife protection laws, passed in May 1912, made it illegal to kill certain species of birds known to be beneficial to agriculture. Since the 1960s, a number of important steps have been taken to conserve Egypt's vulnerable wildlife populations and important habitats. Law 53/1966 prohibited hunting of birds and other wild animals considered to be beneficial and in need of protection. In 1983 Law 102 was passed, establishing the framework for a national network of protected areas. Organisations were established for the protection of nature, including the Egyptian Wildlife Service at the Giza Zoological Garden in 1979 and the Egyptian Environmental Affairs Agency in 1982, now the main component of the newly-established Ministry of State for Environmental Affairs.

CONSERVATION ORGANISATIONS

The Egyptian Environmental Affairs Agency

The Egyptian Environmental Affairs Agency (EEAA) was established by Presidential Decree 631/1982 to be the central co-ordinating body for the environment in Egypt. The EEAA is affiliated with the Ministry of State for Environmental Affairs, established in September 1997. With a mandate for the implementation of Law 102/1983, Law 4/1994 and international environmental conventions, the EEAA is the main government body responsible for nature conservation in Egypt. The Nature Conservation Sector (NCS) is the sector within the EEAA entrusted with this responsibility.

A Game Bird Hunting Management Committee was established in 1994, by decree of the Minister responsible for environmental affairs and chaired by the Executive Chairman of the EEAA, to advise the EEAA on bird hunting matters, mainly in relation to water-bird hunting. The committee meets at the beginning of the hunting season to designate the game birds that can be hunted, as well as to set bag limits and seasons. Other measures have been taken by the committee to control bird hunting, such as prohibiting the use of automatic shotguns and recorded duck calls, as well as restricting the gauge of cartridges used.

The Egyptian Wildlife Service

The Egyptian Wildlife Service (EWS) was the first body established in the country for wildlife conservation, in accordance with Ministerial Decree 349/1979. It is affiliated to the Ministry of Agriculture under the Giza Zoological Garden, and its responsibilities included identifying wildlife conservation needs. Although the EWS had made important contributions to nature conservation in Egypt in the late seventies and early eighties, it now has a much-reduced (largely consultative) role, relating principally to CITES implementation and wildlife disease control and prevention.

LEGISLATION

National legislation

Law 4/1994 For the Environment²

The passing of Law 4/1994 for the Environment was a significant step in Egypt's growing environmental protection and conservation movement. Although the law focuses largely on pollution abatement issues, it also addresses wildlife conservation, offering protection to threatened species listed by decrees and laws (mainly by the Ministry of Agriculture). This is the country's most significant legislation to control environmental degradation issued to date. The law defines the responsibilities of the EEAA and outlines a course of action to protect the environment in co-operation with other concerned bodies.

There are a number of provisions in the law, which have implications for nature conservation and hunting management in Egypt, including the following:

Article 28 forbids the hunting, shooting and catching of species of wild birds and other animals listed by previous Ministry of Agriculture decrees, or by international conventions to which Egypt is party. It forbids the possession, transport and sale of these animals, dead or alive. In addition, it prohibits damage to the nests or eggs of listed birds.

The executive regulations of the law also specify the requirements for hunting licenses and the competent administrative authorities responsible for implementing the provisions of the article.

According to Article 84, individuals violating the provisions of Article 28 shall be penalised by a fine of not less than LE200 and not more than LE 5000 (LE=Egyptian Pound). In addition, the animals shall be seized and equipment used in the violation shall be confiscated.

Law 102/1983 For Protected Areas

Law 102/1983 concerning protected areas is the other important legislation in the field of nature conservation in Egypt. The law established a legal framework for the creation and management of protected areas in the country. These are to be areas of land or water known for their flora, fauna or geological formations and having cultural, scientific, touristic and aesthetic values. According to the law, human activities are to be strictly controlled in the protected areas; hunting in these areas is prohibited. Protected areas are declared upon the issuing of

² The provisions of articles 28 and 48 of Law 4/1994 and their executive regulations are currently under revision.

Prime Ministerial Decrees, based upon the recommendations of the EEAA, the competent authority responsible for the implementation of the law.

Law 53/1966 the Agriculture Law

The Agriculture Law was the first legislation issued for the protection of wildlife. This legislation cancelled Law 13/1922 for the Protection of Birds Beneficial to Agriculture, which had replaced Law 9/1912, the first law issued to protect birds. Chapter 3 of the Agriculture Law provides protection to birds useful to agriculture, as well as to a number of endangered birds, mammals and reptiles.

Article 117 states that it is illegal to possess, damage, transport, import or export, sell or offer for sale any live protected birds or any part of a protected bird killed or captured. It also prohibits the removal or destruction of a protected bird's nest or eggs.

Article 118 makes it unlawful to grow plants harmful to birds or to use traps or lime to catch birds. According to the law, the Minister of Agriculture issues decrees stipulating the wild animals to be protected and the areas where the law apply, as well as the exceptional conditions under which hunting permits may be granted for scientific and recreational interests.

Article 146 states that a violator of the Articles 117, 118 and associated decrees are to be penalised with a fine of a maximum of LE10 and the tools used in the violation are to be confiscated.

International conventions

Since 1936, Egypt has been party to a number of international and regional

conventions concerning nature conservation. Nearly all of these conventions have provisions for the protection and sustainable use of wildlife resources. Some conventions are more active and effective than others. According to Article Number 151 in the Egyptian Constitution, any international convention to which Egypt is a party becomes the law of the land in Egypt and takes precedence over Egyptian law (Baha El Din 1996).

According to Law 4/1994, the EEAA is the competent national authority for overseeing compliance with international and regional environmental conventions. It is empowered to undertake the necessary measures to join international and regional conventions related to the environment and to draft the necessary legislation and decrees to ensure the local implementation and follow-up of these conventions.

PROTECTED AREAS

Much of the nature conservation effort in Egypt has focused on establishing a network of protected areas, with the objective of protecting the country's best known sites of outstanding natural value. Since the passage of Law 102/1983, concerning the establishment of protected areas, 21 protected areas have been declared in Egypt, totalling an area of some 78,000 km² and encompassing several of the country's main physiographic regions and habitats (Table 6, Figure 1). This represents about 8% of Egypt's total land surface. The Government of Egypt has a stated objective of protecting 15% of the country's territory. The IUCN optimal size of national protected area systems is 10%

INTERNATIONAL AND REGIONAL CONVENTIONS

The main international and regional environmental conventions with provisions for on nature conservation that Egypt has signed and ratified are:

- African Convention on Conservation of Nature and Natural Resources (Algiers 1968)
- Convention on Wetlands of International Importance Especially as Waterfowl Habitat (Ramsar) (Ramsar 1971)
- Convention concerning the Protection of the World Cultural and Natural Heritage (Paris 1972)
- Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) (Washington 1973)
- Convention for the Protection of the Mediterranean Sea against Pollution (Barcelona 1976)
- Protocol concerning Mediterranean Specially Protected Areas (Geneva 1982)
- Regional Convention for the Conservation of Red Sea and Gulf of Aden Environment (Jeddah 1982)
- Convention on the Conservation of Migratory Species of Wild Animal (CMS) (Bonn 1983)
- Biodiversity Convention (Rio 1992)
- The African-Eurasian Migratory Waterbird Agreement (AEWA) (ratified by the People's Assembly in December 1998)

of a nation's surface area (IUCN 1993). However, biodiversity components in arid environments, on average, need larger territories to survive and hence would require placing larger areas under protection.

CONTEMPORARY BIRD

CONSERVATION ISSUES IN EGYPT

As in many parts of the world, Egypt's birds and their habitats are today faced with a multitude of threats and problems. These are invariably related to the increasing human population and the associated growing demands on natural resources, and the misapplication of modern technology and its products. The following

presents a brief overview of the most significant of Egypt's contemporary conservation issues that affect birds and their habitats.

Habitat degradation

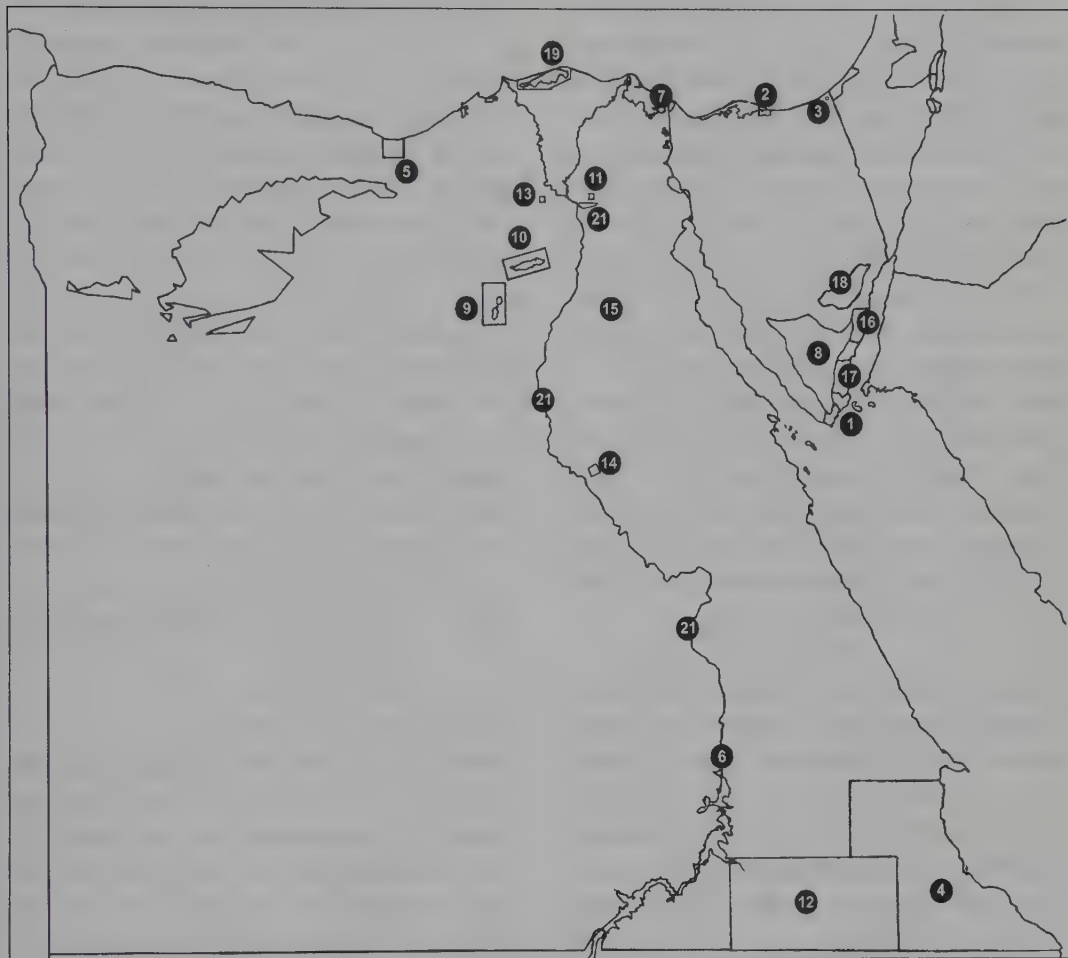
Overgrazing

Overgrazing is a widespread problem in many of Egypt's deserts and semi-deserts, particularly in the northern part of the country where the meagre winter rainfall supports a scant plant cover. Overgrazing is especially severe in the Sinai and along Egypt's Mediterranean coast, west of Alexandria. The problem is becoming increasingly serious as the number of Bedouins and their livestock continues to grow. The use of motor vehicles to

TABLE 6. THE PROTECTED AREA NETWORK OF EGYPT, AS OF JUNE 1999

Name	Declaration Details	Area (km²)
1 Ras Mohammed National Park	Prime Ministerial Decree 1068/1983 adjusted by Prime Ministerial Decree 2035/1996	480
2 Zaranik Protected Area	Prime Ministerial Decree 1429/1985	230
3 El Ahrash Reserve	Prime Ministerial Decree 1429/1985	10
4 Elba National Park	Prime Ministerial Decree 450/1986, adjusted by Prime Ministerial Decree 1186/1986 and Prime Ministerial Decree 642/1995	35,600
5 El Omayed Biosphere Reserve	Prime Ministerial Decree 671/1986, adjusted by Prime Ministerial Decree 90/1996	700
6 Saluga & Ghazal Protected Area	Prime Ministerial Decree 928/1986	0.25
7 Ashtum El Gamil Protected Area	Prime Ministerial Decree 459/1988	35
8 St. Katherine National Park	Prime Ministerial Decree 613/1988, adjusted by Prime Ministerial Decree 90/1996	4,350
9 Wadi El Rayan Protected Area	Prime Ministerial Decree 943/1989	710
10 Lake Qarun Protected Area	Prime Ministerial Decree 943/1989	250
11 Maadi Petrified Forest Protected Area	Prime Ministerial Decree 944/1989	7
12 Wadi Allaqi Protected Area	Prime Ministerial Decree 945/1989, adjusted by Prime Ministerial Decree 2378/1996	30,000
13 Hassana Dome Protected Area	Prime Ministerial Decree 946/1989	1
14 Wadi El Asyuti Protected Area	Prime Ministerial Decree 942/1992	24
15 Sannur Cave National Monument	Prime Ministerial Decree 1204/1992	4
16 Abu Galum Protected Area	Prime Ministerial Decree 1511/1992	500
17 Nabq Protected Area	Prime Ministerial Decree 1511/1992	600
18 Taba Protected Area	Prime Ministerial Decree 316/1997	3,595
19 Lake Burullus Protected Area	Prime Ministerial Decree 1444/1998	460
20 Nile Islands Protected Area	Prime Ministerial Decree 1969/1998	160
21 Wadi Digla Protected Area	Prime Ministerial Decree 47/1999	60
Total		77,776.25

**FIGURE 1. MAP SHOWING LOCATION OF PROTECTED AREAS OF EGYPT
(NUMBERS CORRESPOND TO THOSE IN THE FIRST COLUMN OF TABLE 6)**



transport livestock and water to distant pastures has led to the depletion of habitats previously protected by their remoteness or their marginal value as pasture. It also allows the rapid movement of large numbers of livestock from drought-stricken areas to others with more plentiful rain, thus maximising the grazing pressure in all areas, without allowing the natural regeneration of vegetation to take place.

Firewood collection

Firewood collection is an activity that is closely associated with grazing and herding communities living in desert habitats that contain a fair amount of vegetation. The impact of this activity is probably considerable, particularly since woody plants (which are generally scarce in the Egyptian deserts) are the most targeted. However, the increasing availability of fossil fuels to

many settled Bedouin communities will probably decrease their dependence on firewood for domestic use.

Tourists on desert safaris are also having an increasing impact on woody vegetation in many desert areas. These safaris often go to attractive, remote localities of outstanding natural and ecological value, and cause tremendous damage to native vegetation through collecting fuel for campfires.

The increasing commercial production of charcoal in the Eastern Desert is threatening to eradicate acacia trees from many of the wadis of this desert. Traditional Bedouin harvesting practices only allowed the cutting of branches, not whole trees. But this is observed less and less, because of the infiltration of non-native values into local communities.

Unregulated use of off-road vehicles

Use of off-road vehicles, particularly for recreation and tourism, has increased dramatically in recent years in Egyptian deserts. This is leading, in some regions, to severe degradation of desert vegetation, disturbance to wildlife, disruption of topsoil and long-term scarring of the landscape.

Road construction

Little care is taken during the design and construction of roads, particularly in desert regions, for their potential impact on the habitats they pass through. Roads can act as barriers to the flow of surface water, preventing it from running its natural course, which may severely alter and damage run-off vegetation in downstream sections of wadis. Road construction techniques and practices in Egypt are also very

destructive, unnecessarily scarring vast areas of desert habitats, mutilating the landscape and destroying vegetation. The potentially negative impact of roads does not end with the construction phase but continues long after. Tarmac roads often facilitate access to areas previously protected by virtue of their isolation and inaccessibility, and thus render them subject to hunting and unplanned development pressures.

Solid waste disposal

Building debris is disposed of haphazardly throughout the landscape near urban settlements. These solid waste dumps can cover vast areas of land in very short periods. Solid domestic waste, particularly plastics, is also rapidly infesting the Egyptian landscape, but it is most evident in open desert environments.

Mining and quarrying

With the rapid expansion in urban and industrial development, mining and quarrying activities are exploiting ever-larger areas of Egypt's deserts. Vast areas of the northern part of the Eastern Desert have been transformed into extensive building material extraction sites. The fragile desert landscape is being devastated, the vital topsoil broken up and many important features are being lost. One extreme example is the total loss of the oolitic ridges which used to extend from Alexandria to El Alamein that were quarried for building blocks for the construction of summer resorts along the Mediterranean coast. The problem extends to seemingly remote areas, including the mountains of South Sinai and the northern rim of

the Qattara Depression. There is an urgent need to regulate this activity.

Habitat loss

Land reclamation

The ever-growing need for food in Egypt means that expansion of the cultivated land area is always an important national objective. The search for new, suitable areas to be reclaimed for cultivation is continuous. Unfortunately, favourable areas usually support natural habitats with considerable biological importance. Steppe and semi-desert habitats, especially those enjoying high precipitation, as well as wetland habitats and their margins are the most frequently targeted in Egypt.

Urban encroachment

Although Egypt's urban centres are usually very densely populated and thus occupy less land than comparably populated centres in most other parts of the world, they nevertheless cover considerable areas and are expanding rapidly. In most cases, there is little valuable habitat left adjacent to major urban centres. However, there is a risk that some critical areas, particularly in the coastal zone and parts of the Delta wetlands, will be swallowed up by the expansion of cities and villages.

Tourist development

Tourist development has especially targeted the coastal zone of Egypt, along both the Mediterranean and the Red Sea. In the past decade, tourist villages and hotels have occupied some 10% of the coastline. An even larger percentage has been sold, claimed or designated for further development and is

being built up. The rampant loss of coastal habitats should, perhaps, be Egypt's primary conservation concern.

Pollution

Pesticides and fertilisers

The intensive and unregulated use of both pesticides and fertilisers has plagued the Egyptian agricultural landscape for the past three decades. The negative impact on bird populations has been significant. In recent years, the volume of insecticides has been greatly reduced due to the introduction of biological control techniques. This has led to a notable increase in populations of certain key bird species. However, parts of the central Delta, where pesticide use is heaviest, have virtually no bird life. Agricultural run-off laden with fertiliser and pesticide residues is drastically changing the ecology of many wetlands in Egypt, particularly in the northern Delta.

Domestic and industrial effluent

Untreated effluent from industrial and domestic sources is contributing to the ecological degradation of many of Egypt's wetlands, including the Nile River. On-going projects for the treatment of domestic effluent in Cairo and other major cities in Egypt, as well as efforts by the EEAA to introduce better industrial waste treatment facilities, are promising to alleviate the problem in the near future.

Oil pollution

Oil pollution is an issue mostly in the Red Sea and the Gulf of Suez. Oil spills still occur in this region, but on a smaller scale and less frequently than

in the past. This is probably in part due to the growth of the tourist industry and stricter regulations promoted by the EEAA and the petroleum sector. Almost all of the oil spills in these water bodies come from offshore oil production facilities, oil loading terminals or international shipping lanes.

The latter is largely due to ships discharging ballast water before going through the Suez Canal. There are, however, some land-based sources, such as oil refineries on the Bay of Suez and oil wells in Ras Gharib. The risk to birds from oil spills in the marine environment is very well documented. This is of particular concern in the northern Red Sea and Gulf of Suez region where large seabird breeding colonies and important migration bottlenecks occur.

Unregulated hunting

As in many other Mediterranean countries, there has been a long tradition of hunting in Egypt. Bird hunting has been documented in Egypt since ancient times. The paintings and reliefs on the walls of tombs and temples vividly show that the Ancient Egyptians hunted wild birds as a major source of food. Hunting has continued into modern times, but is no longer a necessity for survival, rather a pastime pursued by certain segments of society, primarily for sport and supplementary income.

Although there is considerable information about birds in Egypt, few formal studies have been undertaken to assess the impact of hunting on bird populations. While it is difficult to determine the effect of hunting on migratory birds, it is likely to have sig-

nificant impacts on the populations of some species; especially globally threatened species, such as Ferruginous Duck and Corncrake. For example, it is estimated that over 4000 Corncrakes are caught every autumn in Egypt (Baha El Din 1993). One of the birds most affected by hunting is the Houbara Bustard; both resident and wintering populations of this species have experienced serious decline in Egypt as a result of over-hunting and are now found in only a few localities.

The main types of hunting that take place in Egypt are reviewed below.

Sport hunting

There are relatively few Egyptian sport hunters, probably between 1000 and 2000 individuals. While game birds like ducks, doves and quail are the main quarry of sport hunters, mammals such as ibex and gazelle, and even crocodiles are also illegally hunted (Baha El Din 1996).

The volume of tourists that come to Egypt for hunting is small. Some 500 visitors, mainly from European countries (in particular, Malta and Italy), come to Egypt to hunt game birds annually. In the past there was no control of hunting tourism and during hunting tours large numbers of birds were killed, including those protected under Egyptian law. This excessive practice led to hunting tourism being banned for several years in the early 1990s. Subsequently, a system was devised by the EEAA to regulate this activity. While there have been substantial improvements in the management of bird hunting tourism in Egypt, violations continue to be reported,

mainly the hunting of protected species and exceeding bag limits.

Many individuals from oil-rich Arabian Peninsula countries hunt illegally in Egypt. This serious problem has been the focus of concern since it was brought to public attention in 1991. The primary quarry of these hunters is the Houbara Bustard, a protected species, but large mammals, particularly gazelle, are also being hunted. Arab hunters are the leading cause of the decline in the populations of Houbara and gazelle. Many of the individuals involved are in high-ranking government positions, which impedes attempts to control their hunting activities in Egypt.

Hunting for food and supplementary income

Bird hunting and trapping along the Mediterranean coast is a traditional pastime during the autumn bird migration. Hunting takes place along the entire north coast of Egypt, from Rafah to Salum. A variety of hunting tools and techniques are used, including nets, traps, lime, rifles and air guns. The main quarry is Common Quail of which over a quarter of a million are caught in Egypt every year. Most of the quail trapped are sold in local markets. Non-game species, such as passerines and near passerines are also caught for sale and personal consumption. It is estimated that several million songbirds are caught annually, along the Western Desert coast during the autumn migration season (Baha El Din 1993).

Waterbird hunting and trapping is a traditional activity taking place in the Delta Lakes, particularly Lakes Manzala, Burullus and Idku, primarily

during the winter. Various techniques are employed to hunt waterbirds, with the majority either shot or caught live in nets. It is estimated that several hundred thousand are caught annually. All species of waterbirds are hunted, both game species, such as ducks, and non-game species, like waders, herons and gulls. While some hunting is for personal consumption, many birds are sold in local markets, such as those at Port Said and Damietta.

Falcon trapping

The trapping of falcons in the autumn is on the rise in Egypt. There are no precise figures, but it is thought that several thousand persons are engaged in falcon trapping in desert regions throughout the country during the autumn migration season. Sharqiya Governorate is the centre for the falcon trade in Egypt and many falcon hunters come from this district. The main target species are Peregrine Falcon and Saker Falcon that are exported and sold for thousands of dollars to Arabian Peninsula countries for use in falconry. However, other species of falcon are caught, such as Lanner Falcon and Common Kestrel to be used as decoys to trap the target species. There are no accurate estimates, but thousands of falcons and other birds of prey, all legally protected, are thought to be caught in Egypt every year. The most destructive aspect of falcon hunting is the impact on the non-target raptor species, many of which are maimed or die (Baha El Din and Salama 1991).

Damage from pest control practices

Indiscriminate methods are often

employed by farmers and even promoted by the Ministry of Agriculture to control birds and other wildlife perceived as pests, leading in many cases to extensive damage to non-target species. For example, Egyptian Geese have been poisoned at Lake Nasser for causing crop damage, leading in consequence to large-scale mortality amongst all wildlife in the 'treated' area. White-breasted

Cormorant have been the subject of an extensive shooting campaign at Lake Bardawil for damaging fisheries, which undoubtedly results in casualties among and extensive disturbance to all other waterbirds in the area. Many waterbirds are shot in fish farms in the Delta because it is believed that they consume fish, even though many of the targeted species are herbivorous or feed on invertebrates.



CORNCRAKE

OVERVIEW OF THE IMPORTANT BIRD AREAS IN EGYPT

A total of 34 IBAs have been identified in Egypt, all of which meet one or more of the selection criteria for globally Important Bird Areas. The total area covered by IBAs in Egypt is some 35,000 km², or about 3.5% of Egypt's territory. All of Egypt's avian habitats are represented within the identified network of IBAs, although not equally so (Table 7, Figure 3). Wetland habitats (both inland and coastal) are the best-represented, occurring in 25, or 74% of IBAs. Wetland habitats also occupy a large area, over 10,000 km², or 28% of the total. Mountain and wadi desert and desert plains are represented in a smaller number of IBAs (13, or 38% of IBAs), but the area they occupy is much greater, estimated at about 20,000 km², or 55% of the total. Coastal deserts on the other hand, are represented in six, or 18% of IBAs and occupy about 5,000 km², or 14% of the total, mostly in one IBA (El Qasr Desert). Oases and agricultural landscapes each contribute a small fraction to the total area of IBAs in Egypt.

The majority of IBAs in Egypt are in the eastern portion of the country, largely east of the Nile (Figure 2), which clearly indicates the great poverty of the Western Desert in avian habitats. This is not a result of lack of information from this vast and desolate region, but a verified fact. Recent extensive surveys of the natural heritage resources of the Western Desert by the EEAA (Baha El Din 1998), have confirmed the lack of any habitats or sites that qualify as a IBAs in that

region. On the other hand, Sinai holds a disproportionately large number of IBAs (29% of Egypt's IBAs) which, although it represents only 6% of Egypt's territory, reflects its diversity of habitats, as well as the unique biogeographic location of the region.

Most Egyptian IBAs qualify for categories A1 and A4 while none qualify for category A2, as there are no endemic or restricted range birds in Egypt. 18 IBAs qualify for two categories, while 15 IBAs qualify for a single category, and only one for three categories (Table 7, Figure 4). A4 IBAs are largely wetlands holding large concentrations of wintering water-birds, or are bottlenecks for soaring migrants. There are 24 IBAs that qualify for A4 category, either alone or in conjunction with other categories, making a total of approximately 14,000 km² or 39% of the total IBA area in Egypt. In contrast there are only 9 IBAs that qualify for A3 category alone or in conjunction with other categories, comprising a total of 22,000 km², or 61% of the total IBA area in Egypt. The larger area encompassed by A3 IBAs reflects the fact that desert and steppe avifaunas (of which the Saharo-Sindian and Mediterranean biome-restricted assemblages are comprised) have ecological and behavioural requirements that entail the utilisation of extensive areas of land. A1 IBAs involve a variety of threatened bird species of variable ecological and habitat requirements, most prominently White-eyed Gull.

The selection of A1 IBAs is straightforward. IBAs solely selected for this category include only those sites known to be of unquestionable importance for the threatened species concerned. White-eyed Gull is the threatened species for which Egypt has the greatest conservation significance and for which the largest number of A1 IBAs have been identified. Qualification for A1 category, based on threatened species occurring on passage, was only considered in conjunction with qualification for other categories and only where these species occur in a regular and predictable fashion.

IBAs selected for A3 category are the most subjective. Basically sites with the highest degrees of representation of biome-restricted species are selected. However, the intactness of the site, its uniqueness, its qualification for other categories, its importance for other fauna and flora, its geographic position and its protection status are factors that are all taken into consideration in the selection process. Table 8 shows the different degrees of representation of biome-restricted (A3) species in various A3 IBAs, as well as the extent to which each species is represented in A3 IBAs. It might be interesting to note that the largest IBA, El Qasr Desert (7,500 km²), selected for A3 category, has the lowest number of biome-restricted species (n = eight). These, however, include 100% of the species characteristic of, and restricted to, the North African component of the Mediterranean Biome, inhabiting Egypt. It is also the only IBA where three species of this assemblage are represented in Egypt (Table 8). Here, site selection was also based on the

uniqueness of the habitat, its intactness and the degree of threat it is facing, in addition to the ecological requirements of the species involved. Wadi Gerafi, on the other hand, has the highest number of A3 species (n = 19), reflecting its diverse habitats and unique biogeographic position.

The best represented A3 species are Crowned Sandgrouse, Hoopoe Lark and Mourning Wheatear that are present in all eight A3 IBAs. This reflects the species' wide distribution in the country. Some A3 species are, however, represented in a small number of IBAs because their distribution in Egypt is limited; one example is Fulvous Babbler. Desert Sparrow is not represented in any IBA because its occurrence in Egypt is erratic and is limited to a very small area of Gebel Uweinat. Although Egyptian Nightjar is not represented in any A3 IBAs, it is present in at least four IBAs selected for other categories; these are Lake Manzala, Lake Burullus Protected Area, Lake Qarun Protected Area and Lake Nasser.

The selection of IBAs according to the quantitative criteria of category A4 is reasonably straightforward and includes all areas where the A4i 1% population limits are exceeded, particularly with regards to wintering waterbird populations, which are fairly well known in Egypt. Migratory bottlenecks are less easy to assess. Many areas in the eastern part of Egypt could, in theory, qualify as A4iv IBAs, since well over 20,000 birds of prey and other soaring birds pass through them on an annual basis. However, the sites have been selected only where birds are known to regularly land (to drink, rest or roost) or to

TABLE 7. IMPORTANT BIRD AREAS IN EGYPT: SUMMARY STATISTICS

No.	Site name	A1	A3	A4i	A4ii	A4iii	A4iv	Habitat	Area (km ²)	Protection
1	Lake Bardawil	*		*		*		a	595	None
2	Zaranik Protected Area	*		*				a+f	250	Protected
3	El Malaha			*		*		a	35	None
4	Bitter Lakes			*				c	60	None
5	Lake Manzala	*		*		*		a	770	Partial
6	Lake Burullus Protected Area	*		*		*		a	460	Protected
7	Lake Idku			*				a	70	None
8	Lake Maryut			*				a	60	None
9	Lake Qarun Protected Area			*		*		c	250	Protected
10	Wadi El Rayan Protected Area	*		*				c+e+g	710	Protected
11	Wadi El Natrun			*				c	20	None
12	Upper Nile	*		*		*		c	150	Partial
13	Aswan Reservoir	*						c	15	None
14	Lake Nasser	*		*		*		c	5,400	Partial
15	Hurghada Archipelago	*		*				b	1,500	Part/ Proposed
16	Tiran Island	*		*				b	31	Protected
17	Wadi Gimal Island	*		*		*		b	2	Protected
18	Qulân Islands	*		*		*		b	3	Protected
19	Zabargad Island	*		*		*		b	4.5	Protected
20	Siyal Islands	*		*				b	2	Protected
21	Rawabel Islands	*						b	1	Protected
22	Nabq Protected Area			*				b+d+f	600	Protected
23	Gebel Elba			*				d+e+f	5,000	Protected
24	The Abraqa Area			*				d+e+g	1,000	Protected
25	St. Katherine National Park			*				d+e+g	4,350	Protected
26	Gebel Maghara	*		*				d+e	1,000	Proposed
27	Quseima			*				d+g	200	Proposed
28	Wadi Gerafi			*				d+e	1,000	Proposed
29	El Qasr Desert			*				e+f	7,500	Proposed
30	Suez	*					*	h	50	None
31	Gebel El Zeit	*					*	b+d+f	1,000	None
32	El Qa Plain	*					*	d+e+f	2,000	None
33	Ras Mohammed National Park	*					*	b+d	480	Protected
34	Ain Sukhna	*	*				*	d+e+g	150	None

Criteria: **A1** globally threatened species; **A3** biome-restricted assemblages; **A4i** 1% or more of congregatory waterbird population; **A4ii** 1% or more of congregatory terrestrial or seabird population; **A4iii** more than 20,000 waterbirds; **A4iv** bottleneck.

Avian Habitats: **a** Mediterranean Coastal Wetlands; **b** Red Sea Coastal Wetlands; **c** Inland Wetlands; **d** Mountain & Wadi Desert; **e** Desert Plains (including dunes, *hammada*, etc.); **f** Coastal Deserts; **g** Oases; **h** Arable & Urban Landscapes.

TABLE 8. REPRESENTATION OF BIOME-RESTRICTED SPECIES IN IBAs SELECTED
ACCORDING TO CATEGORY A3

Species	Site								Total site/ species
	22*	23	24	25	26	27	28	29	
Sooty Falcon	x	x	x	x	x	?	x		6
Sand Partridge	x	x	x	x	x	x	x		7
Lichtenstein's Sandgrouse	x	x	x	x			x		5
Crowned Sandgrouse	x	x	x	x	x	x	x	x	8
Spotted Sandgrouse					x	x	x		3
Hume's Tawny Owl	x	x	x	x	?	?	x		5
Pharaoh Eagle-owl		x	x	x	x	x	x		6
Egyptian Nightjar									0
Fulvous Babbler		x							1
Arabian Babbler						?	x		1
Bar-tailed Lark		x	x		x	x	x	x	6
Desert Lark	x	x	x	x	x	x	x		7
Dupont's Lark **								x	1
Thick-billed Lark **								x	1
Temminck's Horned Lark **					x	x	x	x	4
Hoopoe Lark	x	x	x	x	x	x	x	x	8
Pale Crag Martin	x	x	x	x	x	x	x		7
Blackstart	x	x		x	x	x	x		6
Mourning Wheatear	x	x	x	x	x	x	x	x	8
Hooded Wheatear	x			x	x	x	x		5
White-crowned Black Wheatear	x	x	x	x	x	x	x		7
Red-rumped Wheatear **								x	1
Scrub Warbler	x			x	x	x	x		5
Tristram's Grackle				x					1
Trumpeter Finch	x	x	x	x	x	x	x		7
Desert Sparrow									0
Total species/site	14	15	13	16	16	15	19	8	

* IBA reference numbers listed in Table 7 and used in main text.

** Species inhabiting Egypt that are characteristic of, and restricted to, the North African component of the Mediterranean Biome. The remainder are Saharo-Sindian Biome species.

fly at low altitudes, and hence come in close contact with potential hazards

Degree of protection

Fifteen IBAs or about 44% of IBAs, representing approximately 39% of the total area, fall entirely within the existing Protected Area Network. This is much greater than the proportion of protected IBAs in the Middle East; where only about a quarter of the identified sites have some form of protection (Evans 1994). A further four IBAs are only partially protected (i.e. parts of them fall within the boundaries of existing protected areas). There are five more sites, identified here as IBAs, which are being proposed as future additions to the Protected Area Network of Egypt (Baha El Din 1998). Two of these proposals have developed as a direct outcome of the IBA Programme in Egypt.

However, this greater degree of protection of IBAs in Egypt is more apparent than real. Only six or 17% of Egypt's IBAs could be said to be located in areas receiving adequate protection. The fact is that many protected areas in Egypt are still only 'nominally protected' (i.e. have little effective enforcement or management). This is changing though, as the capacity of the country in the field of protected area management (both human and

financial resources) is increasing, and there is a growing interest and effort to introduce practical and effective protection for these areas in the near future.

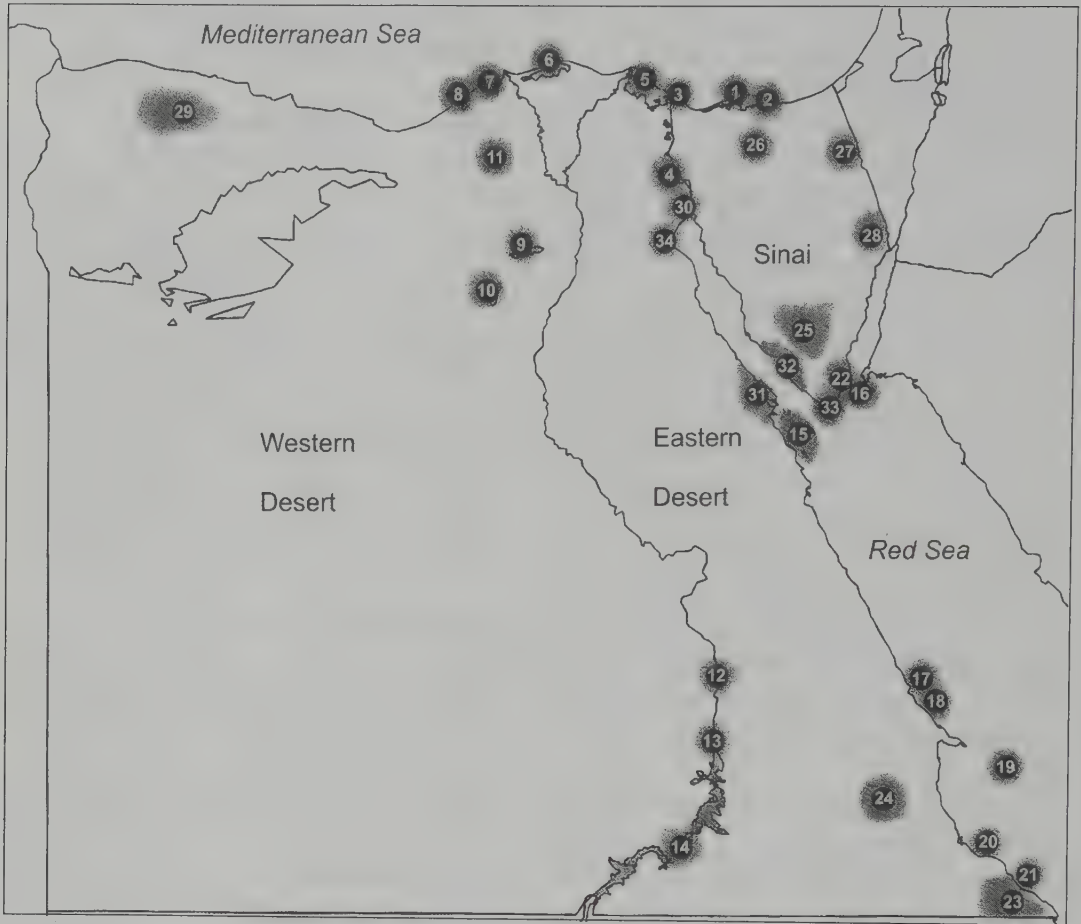
Regional distribution of IBAs

Egypt is divided into 27 Governorates of which 16 have IBAs. Some IBAs are shared by more than one governorate. The Red Sea Governorate has the most with nine IBAs, followed by North Sinai and South Sinai Governorates with five each. This reflects the importance of these regions for biodiversity. The majority of governorates that have no IBAs are small in size and are located in the overpopulated and intensely cultivated Nile Valley and Delta.

Completeness of coverage

It is realised that in a large country like Egypt, even with its fairly simple set of ecosystems and habitats, many of the less accessible and less well-known regions may hold areas of importance for bird life not reported here. The size and significance of such potential sites is, however, thought likely to be small. It is estimated that at least 90% of all IBAs in Egypt have been identified by the IBA Programme to date. Regions that could hold potential IBAs are the oases of the Western Desert (wetland habitats) and the southern Red Sea coastal zone (coastal habitats and near-shore islands).

FIGURE 2. MAP SHOWING LOCATION OF IBAs IDENTIFIED IN EGYPT.



- | | |
|----------------------------------|--------------------------------|
| 1- Lake Bardawil | 18- Qulân Islands |
| 2- Zarnik Protected Area | 19- Zabargad Island |
| 3- El Malaha | 20- Siyal Islands |
| 4- Bitter Lakes | 21- Rawabel Islands |
| 5- Lake Manzalla | 22- Nabaq Protected Area |
| 6- Lake Burullus Protected Area | 23- Gebel Elba |
| 7- Lake Idku | 24- The Abraq Area |
| 8- Lake Maryut | 25- St Katherine National Park |
| 9- Lake Qarun Protected Area | 26- Gabel Maghara |
| 10- Wadi El Rayan Protected Area | 27- Quseima |
| 11- Wadi El Natrun | 28- Wadi Gerafi |
| 12- Upper Nile | 29- El Qasr Desert |
| 13- Aswan Reservoir | 30- Suez |
| 14- Lake Nasser | 31- Gebel El Zeit |
| 15- Hurghada Archipelago | 32- El Qa Plain |
| 16- Tiran Island | 33- Ras Mohammed National Park |
| 17- Wadi Gimal Island | 34- Ain Sukhna |

FIGURE 3. PROPORTION OF DIFFERENT AVIAN HABITATS REPRESENTED IN IBAs (NUMBER OF SITES)

Avian Habitats: **a** Mediterranean Coastal Wetlands; **b** Red Sea Coastal Wetlands; **c** Inland Wetlands; **d** Mountain & Wadi Desert; **e** Desert Plains (including dunes, *hammada*, etc.); **f** Coastal Deserts; **g** Oases; **h** Arable & Urban Landscapes

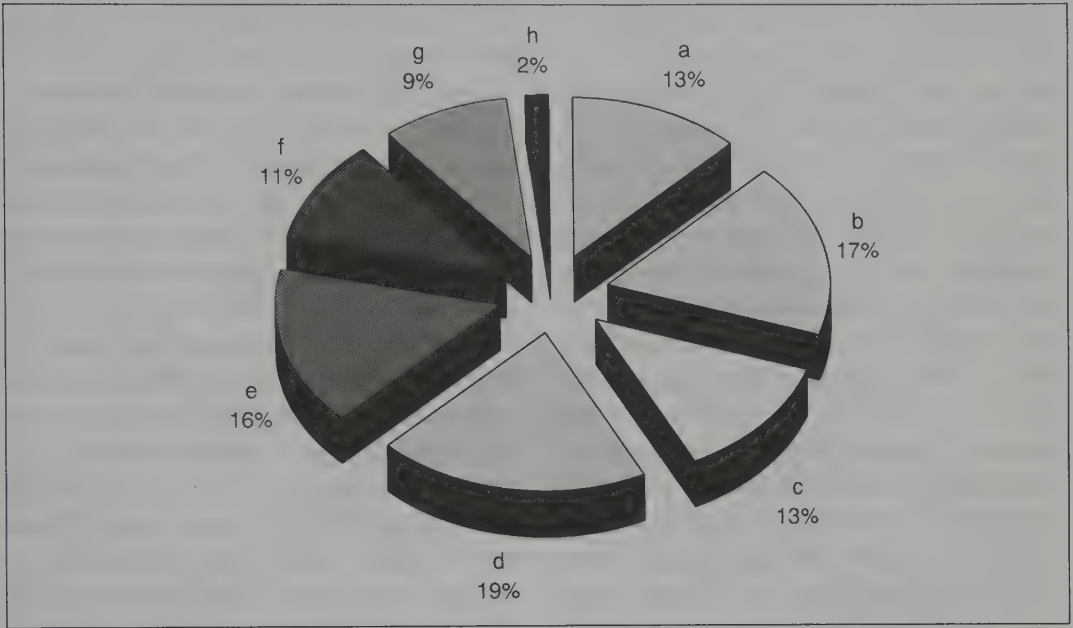
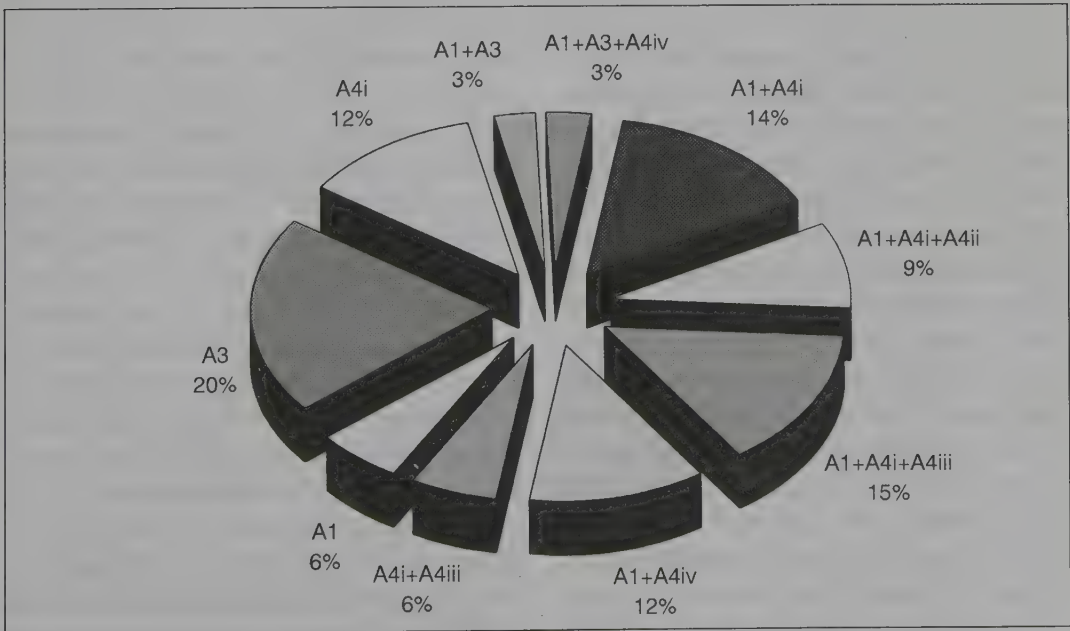


FIGURE 4. PROPORTION OF IBAs SELECTED ACCORDING TO DIFFERENT CATEGORY COMBINATIONS



THE FUTURE: AN AGENDA FOR BIRD CONSERVATION IN EGYPT

The most important part of the IBA Programme is its application and utilisation as a conservation tool. The IBA Programme offers an outline for the future bird conservation agenda in Egypt and will contribute in a significant way to the development and implementation of the conservation strategy for the country. However, establishing a bird conservation strategy cannot be done in isolation from other conservation efforts and environmental issues prevailing in the country. Nature conservation has traditionally received low priority in Egypt, compared with more pressing social, economic and political concerns. The growing environmental movement in Egypt has likewise tended to neglect nature conservation giving it a disproportionately low importance in comparison, for example, with pollution issues.

This situation is changing slowly. Since 1995 several initiatives have been made which focus on biodiversity maintenance and enhancement and nature conservation is increasingly being considered in environmental impact assessments for projects and in universal development issues. On the other hand, the challenges and threats facing nature, biodiversity and birds are growing rapidly. The pace of development in Egypt today is probably unprecedented in its history. The landscape of the country is very rapidly being altered and many valuable natural elements are being lost and degraded, despite the growing awareness of

the problem. The conservation instruments currently in place are still underdeveloped to effectively monitor and protect the country's natural heritage.

Most of the components of the current network of 21 protected areas, which has been established in a little over a decade and is the cornerstone of Egypt's approach to nature conservation, were not chosen on the basis of unified, objective criteria or standard procedures, but on subjective, non-systematic grounds. There are many unique ecosystems and landforms that are not represented in the existing Protected Area Network and which are rapidly being degraded. On the other hand, some of the existing protected areas have questionable conservation value.

There is a realisation by the EEAA of the urgent need to identify the conservation priorities for the country, from both global and national perspectives, and to establish an objective system for the identification, selection and evaluation of protected areas in Egypt. In these terms, the IBA Programme in Egypt was initiated at a critical period when future nature conservation strategies for the country are being shaped. Since most of the current and planned nature conservation effort in Egypt is site-based, the IBA Programme (itself a site-based concept) has particular relevance. The IBA Programme is the first effort of its kind in Egypt, in its attempt to identify, systematically, sites of special natural value and conservation need,

according to an established set of global criteria. It, thus, presents a unique conservation tool formerly unavailable.

In 1996, the EEAA with support from the European Union (EU) initiated a two-year mission to establish a network plan for protected areas in Egypt. This involved the identification and assessment of potential protected areas. Its remit was to review and evaluate all existing and potential protected areas in Egypt, identifying priorities and needs for the development of the Protected Area Network in the country with the ultimate goal of defining the future conservation strategy for the country. The findings of the IBA Programme in Egypt have been very useful in establishing some of the groundwork for this crucial task and have been fully incorporated into the process of site selection and evaluation (Baha El Din 1998). The IBA Programme has, likewise, benefited from the identification mission through the provision of extensive up-to-date information on remote and poorly known regions of Egypt. However, the findings from the mission did not result in the identification of any further areas as IBAs, indicating the relative completeness of the information utilised in the IBA selection process.

Besides their possible incorporation into Egypt's future Protected Area Network, the protection of some IBAs would be better addressed by using other conservation measures. These should be designated as areas of special concern and be subject to certain development regulations, careful planning and management or restrictions,

in order to reduce risks to birds and their habitats at such sites.

The future objectives of the IBA Programme in Egypt should focus on defining priorities and establishing projects and initiatives to promote the wise management of IBAs, with special attention to those that are not suited for inclusion in the Protected Area Network. Promotion of IBAs and generating awareness of their importance will be one of the main tasks following the publication of the IBA Directory. Monitoring of these sites will be an essential to ensure that threats to birds and their habitats are minimised.

Finally, the IBA concept represents only one element of bird conservation in Egypt, and is a practical strategy to save crucial resources. There is of course a serious need to address wider conservation issues, of which IBAs are a part, in their broader context. IBAs and protected areas will not be saved in isolation from the larger trends that influence what takes place in the nation's landscape. Without starting to address the underlying issues and trends, the root causes of habitat degradation and species loss will still be at work. Without making our conservation actions economically sustainable and socially justifiable, our efforts will be short lived. Innovative conservation concepts are needed, which can bring benefit to local communities. Ecotourism is perhaps one of the most promising. There is also a great need to build local conservation capacity financially, logistically and in terms of human resources, both at the governmental and non-governmental levels.

DATA PRESENTATION

The main part of this directory consists of accounts for each of the 34 IBAs identified in Egypt. The site accounts are grouped and arranged according to the IBA criteria for which they were selected. Each site account is composed of the following components:

Site reference number

Each site is given a reference number that is used in the introductory section and elsewhere in the document.

Name

Each IBA is named after the main geographic feature or the most prominent locality name in the site, which best describes its geographic location. Spelling used is mainly that adopted in Egyptian Survey Maps.

Location

Coordinates are given to more precisely define the locality of each IBA. Small sites are defined as single central points, while large sites are described as a rectangle defined by a southern and northern latitude, and a western and eastern longitude respectively.

Area

Area is provided for each site in square kilometers (km²).

Governorate

The administrative district of the site.

IBA criteria

This lists the criteria or criterion for which each IBA was selected.

Protection status

The conservation status of each site is

provided, indicating whether they are fully, partly or not protected under the auspices of Law 102/1983, i.e. by protected area status. It also indicates whether the site is proposed for protection.

Description

The site description provides a summary of the salient geographical and ecological features of each site, with special focus on aspects that have relevance to bird life and the importance of the site to birds.

Importance for birds

This is a brief presentation of the general importance of each site for bird life, with a summary of the reasons for which it qualified under the relevant criteria.

Importance for other species

This is a synopsis of the more prominent, threatened fauna and flora (other than birds) for which each site is important. This is provided where such resources are of particular significance. Threatened species are followed in parentheses by an abbreviation of the threat status, according to IUCN (1996), as follows: Critically Endangered (CR), Endangered (EN), Vulnerable (VU), Lower Risk (LR) and Data Deficient (DD).

Significant conservation issues

This component describes the most significant environmental threats that each site is facing at present and any planned activities that might have adverse effects in the future. Emphasis is on threats that are relevant to bird conservation.

THE IMPORTANT BIRD AREAS OF EGYPT

01 Lake Bardawil

Location: 31° 03'-31° 14'N 32° 40'-33° 30'E
Size: 595 km²
Governorate: North Sinai
IBA criteria: A1, A4i & A4iii



■ PROTECTION STATUS

A Ramsar Site. No local protection granted. However, Zaranik Protected Area encompasses the eastern extremity of Bardawil (see below).

■ DESCRIPTION

Lake Bardawil is a shallow (0.5-3.0 m), hypersaline lagoon occupying much of the Mediterranean coast of Sinai. It is separated from the sea by a sandbar that varies in width between 100 m and 1 km. Around 46% of the lake shore is bare sand, 35% is fringed with a band of halophytic vegetation and 19% is mudflats of varying width (Dunnet *et al.* 1986). The sandy bottom of the lake is covered by scattered patches of the sea grass *Ruppia spiralis*. Dunnet *et al.* (1986) identified four main types of avian habitats in Bardawil: salt marsh, open water, sandy shore and mud flat. He found that the latter was the most important and commonly used habitat by birds. Originally, Bardawil was connected to the sea via one small natural inlet at its eastern extremity (*Bughaz Zaranik*), usually becoming inundated with sea water only during winter when storms often breach the unstable sandbar. During summer, most of the lake was

isolated from the sea, and water evaporated leaving behind large areas of *sabkha*. Several man-made inlets have been dredged along the sandbar since 1905 in an effort to allow the permanent inundation of the lagoon and maintenance of salinity levels suitable for the development of fisheries. Today, there are two man-made inlets (*Bughaz I, II*), which are continually being blocked through sedimentation (Varty *et al.* 1990, Euroconsult 1992a, 1993). Bardawil is the source of an important local fishery, producing over 2,500 tones annually (1987 figure), mostly of the high value saltwater fish, *Sparus auratus* and *Mugil sp.* (65% and 20% of production respectively) and employing some 3,000 fishermen (Euroconsult 1992a). Fishing is suspended between January and May in order to allow fish stocks to recuperate.

■ IMPORTANCE FOR BIRDS

Lake Bardawil is of moderate importance for wintering waterbirds. Meininger & Atta (1994) report a total of 26,968 waterbirds counted in the winter of 1989/90 (a proportion of these were counted within the limits of Zaranik Protected Area). Only White-breasted Cormorant and Greater

Flamingo winter in significant numbers. Up to 30,000 of the latter species were estimated to be present at Bardawil in winter 1993 (see below). The importance of Bardawil as a stopover and staging site has not been investigated thoroughly, but there are indications that at least a portion of the massive numbers of migrants passing through Zaranik, particularly in autumn, utilise some of the habitats available at the lake (Dunnet *et al.* 1986, Varty *et al.* 1990). Diversity of breeding species is very low. However, two of the six species known to breed in the immediate vicinity of the lake, Little Tern and Kentish Plover, occur in internationally important numbers

small populations of the endangered Egyptian Tortoise (EN) might still exist (Baha El Din 1994). Mammals: Fennec Fox (DD) still inhabits adjacent dunes in low density.

■ SIGNIFICANT CONSERVATION ISSUES

White-breasted Cormorant causes substantial damage to fisheries in Bardawil. Mr. Magd El Bawab (pers. comm.) estimated that 6% of Bardawil's fish production was lost to White-breasted Cormorant in the winter of 1989/90. He based his estimate on a sample of 200 birds each of which contained an average of 400 gms of fish. Furthermore, it appears that there are growing numbers of this species wintering at Lake Bardawil, as well as at other Egyptian wetlands in the northern Delta. In late November 1993 an estimated 30,000 were counted in the eastern part of the lake (Waheed Salama pers. comm.), compared with about 5,000 counted in winter 1989/90.

In an attempt to reduce the damage, the fisheries authority has arranged shooting parties over the past few years to try to control White-breasted Cormorant populations on a regular basis and attempted to allow fishing throughout the winter, in order to increase disturbance to the birds. These measures apparently did not prove effective in resolving the problem, meanwhile causing increased disturbance and many casualties amongst non-target species, as well as a severe decline in the fish productivity of the lake.

Bird catching is widespread during the autumn, when tens of kilometres of trammel nets are set up along the Mediterranean coast of North Sinai,

A1 GLOBALLY THREATENED SPECIES

Vulnerable

Corncrake	Fairly common migrant during autumn
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Near Threatened

Pallid Harrier	Regular migrant and winter visitor
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A4i 1% OR MORE OF POPULATION

White-breasted Cormorant	5,000-30,000 wintering
Greater Flamingo	13,000 wintering
Little Tern	1,200 pairs breeding
Kentish Plover	1,900 pairs breeding

A4iii MORE THAN 20,000 WATERBIRDS

26,968 waterbirds in winter of 1989/90 and up to 30,000 White-breasted Cormorant in winter 1993/94.

■ IMPORTANCE FOR OTHER SPECIES

Reptiles: The Mediterranean shore of the lake is of potential importance for breeding endangered marine turtles. Two species are known to breed locally: Loggerhead (EN) and Green Turtle (EN). Islets and dunes adjacent to the lake represent some of the last remaining habitats where extremely

including much of Bardawil's sand bar. The main target species is Common Quail, although large numbers of many other non-target species are also caught, including the threatened Corncrake. Baha El Din & Salama (1991) estimated that 205,000 Common Quail and 30,000 non-target species (including 1,100 Corncrake) were caught in North Sinai during the autumn of 1990. Shooting of migrating waterbirds takes place on a small scale along the Mediterranean, as well as on the shores of Lake Bardawil. Falcon catching is also widespread. In autumn 1990 over 1,000 birds of prey were caught in North Sinai (Baha El Din & Salama 1991). Disturbance by fishermen and coast guard personnel reduces success of breeding waterbirds. The recent construction of a temporary dirt road along the sand

bar drastically increased disturbance in the area.

The North Sinai Agriculture Development Project (NSADP) is a large-scale development scheme aiming, ultimately, at reclaiming 400,000 acres in North Sinai using fresh irrigation water from the Nile River. The NSADP, which has already entered its initial phases, will completely change the landscape of Bardawil. The lake will potentially become increasingly brackish as agricultural drainage water reaches it, either through direct discharge or through seepage. Although this, in itself, may not have a negative impact for most birds, it is expected that a drastic growth in human population will occur, increasing urban encroachment pressures and introducing pollution problems hitherto unknown in the area.

02 Zaranik Protected Area

Location: 31° 02'-31° 06'N 33° 22'-33° 28'E
Size: 250 km²
Governorate: North Sinai
IBA criteria: A1 & A4i



■ PROTECTION STATUS

Protected Area. Protected by Prime Ministerial Decree 1429/1985. An administrative building and visitor centre have recently been opened. A GEF-Medwet-EEAA project to develop the management and infrastructure of the reserve is expected to start in 1999 or 2000.

■ DESCRIPTION

Zaranik Protected Area is located at the eastern end of Lake Bardawil and encompasses an eastern extension of that lake: the Zaranik Lagoon. The lagoon is shallow, with numerous small islets scattered throughout it, most of which are covered with dense halophytic vegetation. Extensive mud

flats and salt marshes are found at the lagoon's shores merging into *sabkha* and sand dunes further inland. Sand dunes dominate the landscape of the southern part of the Protected Area. Salt works were established at Zaranik in the early 1980s, prior to its declaration as a protected area, and consist of a pumping station, extensive evaporation pools and salt pans. The facility became active only in 1997.

■ IMPORTANCE FOR BIRDS

Zaranik's importance is primarily as a bottleneck area for migrant Palearctic waterbirds. Every autumn hundreds of thousands of waterbirds flying along the eastern Mediterranean coastline concentrate at Zaranik or pass through the area, many landing to rest and feed before resuming their journey southwards across Sinai or westwards to the Nile Valley (Table 9). Vast numbers of passerines and near-passerines arrive at the coast, as they do everywhere along the Egyptian

Mediterranean shoreline, but here hunting and persecution is illegal and controlled. Some 270 bird species have been reported in Zaranik; of these, only ten species are known to breed in the Protected Area. Little Tern and Kentish Plover are the most numerous and prominent of the breeding birds. Zaranik is also the only locality in Egypt where Avocet is known to breed on a regular basis. In summer 1994, five pairs were breeding. Large numbers of the species also winter at Zaranik, with up to 700 counted in December 1998.

A1 GLOBALLY THREATENED SPECIES

Vulnerable

Corncrake

Fairly common migrant during autumn

Near Threatened

Pallid Harrier

Regular migrant and rare winter visitor

A4i 1% OR MORE OF POPULATION

White-breasted Cormorant

5,000 wintering

Greater Flamingo

10,000 wintering

Slender-billed Gull

2,000 wintering



MOURNING WHEATEAR

TABLE 9. MAXIMA OF SOME OF THE MOST NUMEROUS AUTUMN MIGRANTS COUNTED DURING FOUR SEASONS BETWEEN 1979 AND 1992 AT ZARANIK

Species	Maximum counted
White Pelican	2,122
Little Bittern	4,162
Black-crowned Night Heron	2,742
Common Squacco Heron	5,487
Great White Egret	4,239
Grey Heron	6,194
Purple Heron	5,349
Garganey	221,616
Avocet	6,828
Common Pratincole	490
Ringed Plover	1,909
Kentish Plover	5,687
Sand Plover	197
Sanderling	5,776
Little Stint	15,503
Dunlin	8,134
Black-tailed Godwit	1,254
Slender-billed Gull	2,011
Common Tern	12,433
Little Tern	1,810
Whiskered Tern	950
White-winged Tern	18,436

■ IMPORTANCE FOR OTHER SPECIES

Reptiles: The Loggerhead Turtle (EN) was recently found to have its largest breeding concentration along the Egyptian Mediterranean in the Protected Area (Waheed Salama pers. comm.). The Green Turtle (EN) is suspected of breeding locally and the Leatherback Turtle (EN) has been recorded once. Islets and littoral dunes fringing the southern margins of the Zaranik Lagoon and adjacent *sabkha* are said to have held a small population of the Egyptian Tortoise (EN). Savigny's Agama, endemic to

the Isthmic Desert and the western Negev, is found throughout the sandy habitats of the region. **Mammals:** the rare Fennec Fox (DD) has been recorded.

■ SIGNIFICANT CONSERVATION ISSUES

Zaranik shares many of the same problems as Lake Bardawil, listed above. Due to the growing coastal tourist development activity in North Sinai, the value of land in the area has risen sharply in the past few years. This has led local politicians, under pressure from native inhabitants who claim

ownership of the land within the Protected Area, to dispute the protection status and boundaries of Zaranik. Traditional land ownership in the Protected Area is a sensitive issue that needs to be addressed in an effective and fair manner.

The salt works in Zaranik have caused large scale, ecological changes in the Zaranik Lagoon, none of which appear to have had a negative impact on birds, in fact they seem to have been largely positive. The production of salt has caused limited disturbance so far.

A temporary road has been constructed along the sandbar as part of a project to enlarge and stabilise the *Bughaz* connecting Lake Bardawil with the Mediterranean and is causing increased disturbance to both breeding and wintering birds in the area.

The effectiveness of the Protected Area in preventing bird-catching activities (primarily during autumn) has been fairly high. However, violations still take place regularly. Falcon catching activities have proven particularly difficult to control.

03 El Malaha

Location: 31° 13'N 32° 19'E

Size: c. 35 km²

Governorate: Port Said

IBA criteria: A4i & A4iii

■ DESCRIPTION

Malaha was formerly the easternmost extension of Lake Manzala, from which it was cut off when the Suez Canal was constructed in the 1800s and was further diminished by the construction of the Port Said by-pass in the 1980s. Today, Malaha is composed of two shallow hyper-saline lagoons, the size and shape of which are variable; they reach their maximum size during winter and become nearly dry in summer. The lagoons are connected to the Mediterranean via *Bughaz* El Kala (eastern lagoon) and El Malaha (western lagoon). To the south and east lies the Tina Plain, which is a barren, expansive, salt-encrusted *sabkha*, fringed at its southern edge by



a large salt marsh dominated by *Nitraria retusa* bushes. The lagoons are separated from the Mediterranean by a sand bar that varies in width between 100 and 500 m, and is covered in many areas with dense halophytic vegetation. Malaha supports a fishery of modest production. The catch in 1977 was 631 tons (Meininger & Atta 1994). The lagoon is manipulated to maximise fish production.

■ IMPORTANCE FOR BIRDS

Despite its fairly small size, Malaha is considered one of the most important wetlands in Egypt for waterbirds, and holds some of the greatest densities and numbers of both wintering and breeding waterbirds in the country. In

winter 1990 a total of 52,700 waterfowl was counted, and in winter 1994, 6,500 Greater Flamingo were counted in the eastern lagoon alone. The relative isolation from human activity and highly productive habitats of Malaha make it attractive for several breeding waterbird species. In spring 1990 a large breeding colony of Slender-billed Gull was found here (about 52,700 nests), the largest known breeding population in the Mediterranean Sea (Meininger & Atta 1994). Greater Flamingo is known to breed as well, but numbers and breeding success vary from year to year, and in some years breeding is not attempted. In 1986 some 750-1,000 adults with 350-400 chicks were counted (Goodman & Meininger

1989). Breeding also took place in 1993 and 1994 (Waheed Salama pers. com.). Little Tern and Common Tern also breed in smaller numbers, Malaha being the only known breeding locality of the latter species in Egypt (Meininger & Atta 1994).

■ SIGNIFICANT CONSERVATION ISSUES

Malaha suffers from several management related problems that adversely affect its ecology and bird life. However, all of these are dwarfed by the recent advent of the "East of the Bypass Project". A major project launched in 1998 to establish a port and an industrial zone located precisely where the Malaha lagoons are. Work has already started on the infrastructure of the project. Unfortunately, this will mean the very rapid, complete and permanent disappearance of this important wetland.

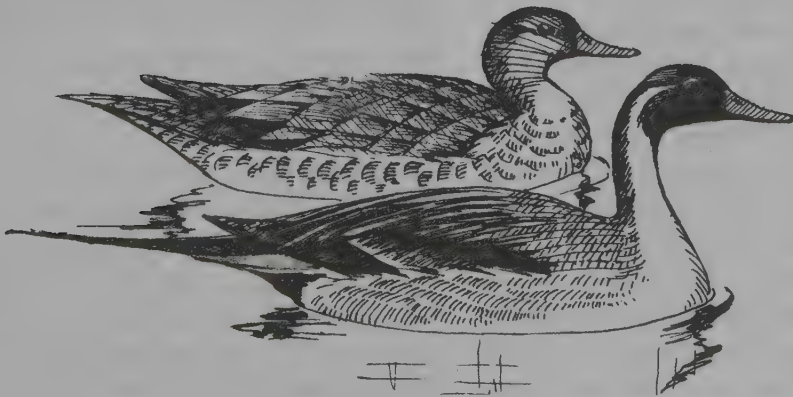
Bird catching takes place during autumn all along the Mediterranean coast of this region. As in the rest of North Sinai, Common Quail is the chief target species of this activity. The impact on waterbirds is thought to be small.

A4i 1% OR MORE OF POPULATION

White-breasted Cormorant	5,300 wintering
Greater Flamingo	375-500 pairs breeding, 6,500 wintering
Northern Shoveler	8,200 wintering
Avocet	8,910 wintering
Kentish Plover	3,290 wintering
Slender-billed Gull	5,700 pairs bred in 1990

A4iii MORE THAN 20,000 WATERBIRDS

52,700 waterbirds were counted in the winter of 1989/90



PINTAIL

04 Bitter Lakes

Location: 31° 10'N 30° 30'N 32° 10'-32° 20'E
Size: c. 60 km²
Governorate: Ismailiya
IBA criteria: A4i



■ **PROTECTION STATUS**
 Not protected.

■ DESCRIPTION

Before the construction last century of the Suez Canal the Bitter Lakes were relatively small hyper-saline inland lakes, with salinity of up to 161g/l (Vadiya & Shenuda 1985), surrounded by salt-encrusted *sabkha*. After the lakes were connected with both the Mediterranean and the Red Sea by the Suez Canal, they became a single marine body, their size increased and salinity decreased, reaching between 43 and 46g/l in 1972 (Meininger & Atta 1994). The northern wider end of this water body is known as the Great Bitter Lake, while the southern narrower part is known as the Little Bitter Lake. The bottom is sandy and scantily covered with vegetation. Agricultural land, tourist developments and occasional areas of salt marsh border the lakes on the western side, while the eastern side is mostly sandy desert. Drainage from recent agricultural development on the Sinai side of the Suez Canal has created a fairly large *Typha* and *Phragmites* marsh at the north-western corner of the Great Bitter Lake. There are a number of low sandy islets and spits in the Little Bitter Lake and scattered along the

eastern side of the lakes; these are used for nesting by Little Tern.

■ IMPORTANCE FOR BIRDS

Although there has not been a comprehensive systematic count of birds at the Bitter Lakes, they are known to be of limited importance for wintering and migratory waterfowl. Slender-billed Gull is the only species that is known to winter in internationally important numbers. The species most likely breeds locally, as evidenced by the presence of birds throughout the year, especially juveniles in summer. The species may breed on some of the islands and sandy spits on the eastern side of the lakes. Little Tern, Kentish Plover and Spur-winged Plover also breed in good numbers.

A4i 1% OR MORE OF POPULATION

Slender-billed Gull

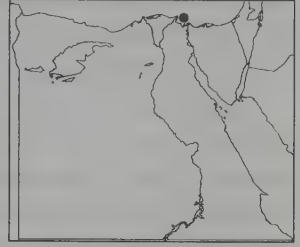
3,065 wintering

■ SIGNIFICANT CONSERVATION ISSUES

Oil pollution from ships passing through the Suez Canal is always a potential threat to waterbirds in this small body of water. The rapid urban expansion, mainly for tourism, which is occurring particularly along the western shores of the lake, is threatening to eliminate much of the natural vegetation around the lake and will lead to increased disturbance.

05 Lake Manzala

Location: 31° 03' - 31° 31'N 32° 49' - 32° 18'E
Size: 770 km²
Governorate: Port Said, Damietta, Qalyubiya, Sharquiya
 and Ismailiya
IBA criteria: A1, A4i & A4iii



■ PROTECTION STATUS

Not protected, with the exception of Ashtum El Gamil Protected Area near Port Said, declared by Prime Ministerial Decree 459/1988. There is a proposal to increase the size of this Protected Area to encompass larger, more important parts of Lake Manzala.

■ DESCRIPTION

Lake Manzala, the largest of Egypt's Mediterranean wetlands and the most productive for fisheries, is located in the north-eastern corner of the Nile Delta. Manzala is generally rectangular in shape, about 60 km long and 40 km wide, and has an average depth of 1.3 m. It is separated from the Mediterranean Sea by a sand bar, which has three *Bughazs* connecting it with the sea. The salinity in the lake varies greatly; while it is low near drain and canal outflows in the south and west, it is saline in the extreme north-west. Brackish conditions predominate over much of the remainder of the lake. Over 1,000 islands of varying sizes are scattered throughout the lake (Abu El Izz 1971).

Ayyad *et al.* (1993) recognised three main habitat groups which are common in this and other coastal Delta wetlands: First, *Phragmites* and *Typha*

reed swamps, with associated submerged hydrophytes (e.g. *Potamogeton pectinatus* and *Najas armata*) found extensively in less saline portions of the lake in the south and west and on many islands. Second, *Juncus* and *Halocnemum* salt marshes on northern (coastal) margins of the lakes and some islands. Third, sand formations occupied by several plant communities that are found on coastal dunes. In addition to these, two further important avian habitats can be recognised: open water and mud flats. Large areas in the north west of the lake have been turned into fish farms, while much of the southern part (south of 31°10'N) has been divided into large plots and drained in preparation for its conversion to agricultural use.

3.7 km³ of fresh water (mostly from agricultural drainage) flow annually into Lake Manzala from nine major drains and canals (P. Lane Ltd. 1992). The most important of these are: Faraskur, Al Sarw, Baghous, Abu Garida and Bahr El Baqar. Of all the drains discharging into Lake Manzala, the Bahr El Baqar drain is the most polluted (P. Lane Ltd. 1992). It carries a mixture of treated and untreated waste water originating from Cairo and contributing much to the deteriorating

water quality of the lake. *Bughaz El Gamil* is the main connection between the lake and the Mediterranean. Several other less important sea connections have recently been enlarged.

Ashtum El Gamil Protected Area encompasses a small area (c. 35 km²) located along the sandbar at *Bughaz El Gamil*, the largest connection between the lake and the sea. The main purpose for creating this Protected Area was the protection of gravid fish and fry during their passage in and out of Manzala, through *Bughaz El Gamil*. Ashtum El Gamil includes no suitable waterfowl habitat, nor is it large enough to be of any significance for the conservation of the vast majority of Manzala's resident and transient avifauna. Steps are being taken to enlarge the reserve, which could increase its importance.

■ IMPORTANCE FOR BIRDS

Manzala is by far Egypt's most important wetland for wintering waterbirds, holding a total of 233,901 birds in winter 1989/90 (Meininger & Atta 1994). This represented about 40% of all waterfowl counted throughout Egypt's wetlands that winter and included the world's largest concentrations of wintering Little Gull and Whiskered Tern. Meininger & Atta (1994) also counted up to 36,180 waders in spring 1990 indicating the great importance of the wetland for passage populations, especially of Avocet, Little Stint, Dunlin and Ruff. No similar counts are available for autumn, but the lake is likely to be as important in that season. Manzala is also of importance for a number of breeding waterbirds and wetland

species. About 35 species are known to breed. The most prominent of these are: Little Bittern, Little Egret, Common Squacco Heron, Purple Gallinule, Little Tern, Kentish Plover, Spur-winged Plover, Common Pratincole, Egyptian Nightjar, Pied Kingfisher and Clamorous Reed Warbler. For some of these species, Manzala is one of the most important breeding areas in the entire Western Palearctic region (P. Lane Ltd. 1992).

A1 GLOBALLY THREATENED SPECIES:

Vulnerable

Corncrake Fairly common migrant during autumn

Near Threatened

Pallid Harrier Uncommon migrant and rare winter visitor

A4i 1% OR MORE OF POPULATION

White-breasted Cormorant	22,500 wintering
Little Egret	1,073 wintering
Great White Egret	528 wintering
Common Squacco Heron	300 pairs breeding
Northern Shoveler	12,021 wintering
Purple Gallinule	500 pairs breeding
Avocet	8,981 wintering
Ringed Plover	563 wintering
Kentish Plover	4,323 wintering
Kittlitz's Plover	35 wintering
Spur-winged Plover	300 pairs breeding
Redshank	3,247 wintering
Little Gull	47,316 wintering
Black-headed Gull	45,080 wintering
Slender-billed Gull	2,269 wintering
Armenian Gull	358 wintering
Little Tern	1,500 pairs breeding
Whiskered Tern	39,331 wintering

A4iii MORE THAN 20,000 WATERBIRDS

233,901 waterbirds were counted in the winter of 1989/90

■ IMPORTANCE FOR OTHER SPECIES

Reptiles: The Mediterranean shore of the lake is a potential site for breeding of endangered marine turtles. Loggerhead (EN) is the species most likely to breed in the area. Mammals: Swamp Cat is still known to occur in good numbers.

■ SIGNIFICANT CONSERVATION ISSUES

At the beginning of the century the lake covered some 1,698 km². However, ambitious land reclamation projects had reduced the size of the lake to 905 km² by 1981 and to 770 km² by 1988 (P. Lane Ltd. 1992). It is predicted that existing reclamation plans will reduce its area further to 469 km² (Baldwin *et al.* 1992). Encroachment from adjacent urban centres is threatening to reduce the area of the lake even further. Since the construction of the High Dam and the almost complete cessation of sedimentation, the coasts of the eastern Delta have altered from predominantly accretional to erosional. The rapid erosion of the coast of Lake Manzala and encroachment of the sea in a region which, during the late Holocene, had been expanding northwards at an average rate of about 10 m per year is of concern (P. Lane Ltd. 1992).

The implementation of the El Salam Canal project and the NSADP will require the annual diversion of about 1.27 km³ of water from the Delta (currently mostly destined for Manzala). This is expected to lead to a significant increase in the salinity of the lake from the current 3 g/l to 8 g/l (P. Lane Ltd. 1992), consequently changing its whole ecology. The present *Bughaz El Gamil* will be far too small to safeguard the present water level. Without large infrastructure works, it can be

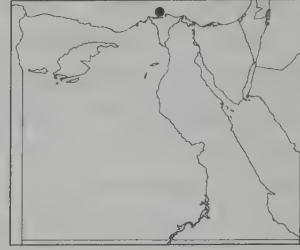
expected that much of the lake will turn into a very shallow brackish marsh, with much of the extensive reed swamp (and associated avifauna) declining sharply or disappearing altogether (P. Lane Ltd. 1992).

The pollution problem is very severe and is caused by many factors. Municipal waste water is, perhaps, the most serious source of pollution, as much of the raw and treated sewage from Cairo, Port Said and Damietta ends up in Manzala. Industrial waste water is also discharged into the lake from various sources, including industrial areas north of Cairo. In addition, agricultural drainage water, which makes up most of the fresh water entering the lake, has high concentrations of fertilisers and pesticides. Solid waste from adjacent urban centres is regularly dumped into the lake and used for landfill.

Highly organised bird catching activities take several tens of thousands of waterfowl every year, mainly ducks, European Coot, Moorhen and waders. In spring 1990 a total of 11,709 birds (presumably, mostly from Manzala and its environs) were found for sale in bird markets in Port Said and Damietta (Meininger & Atta 1994). The impact of these activities on waterfowl populations is not known. It is probably a less significant threat than that posed by the deterioration and eventual loss of Manzala's habitats.

06 Lake Burullus Protected Area

Location: 31° 22' - 31° 36'N 30° 33' - 31° 07'E
Size: 460 km²
Governorate: Kafr El Sheikh
IBA criteria: A1, A4i & A4iii



■ PROTECTION STATUS

Ramsar site. Protected by Prime Ministerial Decree 1444/1998. A GEF-Medwet-EEAA project is scheduled to begin in 1999 or 2000 to develop the management and infrastructure of the Protected Area.

■ DESCRIPTION

The Protected Area is composed primarily of Lake Burullus, a large, shallow, fresh-to-brackish, coastal lagoon located between the two Nile branches forming the Delta. It is elongate in shape extending for about 54 km from east to west with a width of between 6 and 21 km and an estimated average depth of 0.75 - 1 m (van Pelt *et al.* 1992). The lake is separated from the sea by a broad, dune-covered, sand barrier, which varies in width from a few hundred meters in the east to five kilometres in the west. There are some 50 islands scattered throughout the lake with a total area of 0.7 km² (van Pelt *et al.* 1992). On average 50 - 70 m³ of slightly saline, nutrient rich water enters the lake annually from the south via six drains (van Pelt *et al.* 1992) *Bughaz* El Burullus, located in the north east corner of the lake, is the only direct connection between Burullus and the Mediterranean. Salinity in the lake decreases towards

the south and west as the distance from the *Bughaz* increases, becoming fresh near the outflows of drains and canals that flow into the lake from the south. Consequently, the north shores of the lake are dominated by salt marshes and mudflats; while the southern shore is bordered by an extensive fringe of *Phragmites* and *Typha* reed swamps, which currently covers over 25% of the lake area. Lake Burullus has abundant submerged vegetation dominated by *Potamogeton pectinatus* and *P. crispus*, which is densest in the southern portion of the lake. Burullus is by far the least disturbed and damaged of the Delta wetlands and its environs still retain some aspects of wilderness, which have been lost throughout most of the Delta.

■ IMPORTANCE FOR BIRDS

Burullus is one of Egypt's most important wetland for wintering waterfowl, holding a total of 98,887 in winter 1989/90 (Meininger & Atta 1994), which represents the second largest concentration recorded in Egypt that winter. The lake supports the largest numbers of some wintering waterfowl in the country including: Wigeon, Northern Shoveler, Ferruginous Duck, Northern Pochard, European Coot and

Redshank. Burullus is one of the most important wintering grounds for the vulnerable Ferruginous Duck in the eastern Mediterranean. Because of its relative isolation, Burullus is also an important breeding site for several waterbirds and wetland species. About 35 species of birds are known to breed at Burullus. The most prominent of these include: Little Grebe, Little Bittern, Purple Gallinule, Little Tern, Kentish Plover, Spur-winged Plover, Common Pratincole, Egyptian Nightjar, Pied Kingfisher, Senegal Coucal and Clamorous Reed Warbler. The endemic Delta subspecies of Lesser Short-toed Lark (*Calendrella rufescens nicolli*) probably has its largest population in the vicinity of Burullus.

A1 GLOBALLY THREATENED SPECIES

Vulnerable

Ferruginous Duck	Regular winter visitor, maximum count 576 in winter 1989/90
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A4i 1% OR MORE OF POPULATION

Wigeon	24,997 wintering
Northern Shoveler	15,427 wintering
Avocet	2,949 wintering
Purple Gallinule	500 pairs breeding
Common Pratincole	2,000 pairs breeding
Redshank	3,378 wintering
Little Gull	3,906 wintering
Little Tern	600-800 pairs breeding
Whiskered Tern	3,530 wintering

A4iii MORE THAN 20,000 WATERBIRDS

98,887 waterbirds were counted in the winter of 1989/90

■ IMPORTANCE FOR OTHER SPECIES

Reptiles: the Mediterranean shore of the lake is a potential breeding site for endangered marine turtles. Loggerhead Turtle (EN) is known to breed locally. Mammals: Swamp Cat is known to occur in numbers.

■ SIGNIFICANT CONSERVATION ISSUES

Burullus covered 588 km² in 1913. Van Pelt *et al.* (1992) estimate that 37% of the open water area and 85% of marsh area have been lost during the past 40 years, largely as a result of on-going drainage and reclamation of the lake's eastern, western and southern margins; and the proliferation of emergent and submerged vegetation. Stanley & Warne (1993) anticipate that Burullus, along with other coastal Delta wetlands, will be further reduced in area as a result of landward migration of coastal sand barriers. This is a consequence of severe coastal erosion, from which the northern coast of the Delta has suffered since the closure of the High Dam in 1964, and the impoundment of over 98% of the Nile sediment behind it.

Despite being the least polluted of the northern Delta lakes, increasing quantities of agricultural drainage water with heavy fertiliser and pesticide loads are being released into Burullus, contributing significantly to the eutrophication and pollution of the lake. Local fishermen complain that the combination of occasional siltation and closure of the *Bughaz* and increased drainage water leads to the reduction of the salinity of the lake and the expansion of reed swamps and reduces fishing opportunities. The large number of fishermen on the lake cause continuous disturbance to waterbirds, forcing them to utilise less optimal habitats or sites.

Waterbird catching is widely practised on the lake in winter. Quail nets, shotguns and lime are used along the sandbar to catch thousands of migrants in the autumn (Baha El Din 1991).

A coastal highway running along

the entire northern coast of the Delta, designed to link the Egyptian Mediterranean coastal regions west and east of the Delta, is near completion. The highway, which runs through

the sandbar north of Lake Burullus, has dramatically increased accessibility and hence, coastal development pressures on this, the last wilderness of the Delta.

07 Lake Idku

Location: 31° 13' - 31° 16'N 30° 07' - 30° 14'E

Size: 70 km²

Governorate: Beheira

IBA criteria: A4i



■ PROTECTION STATUS

Not protected.

■ DESCRIPTION

A shallow, coastal wetland located west of the Rosetta Nile branch. Three main drains discharge into the lake, while *Bughaz El Maadia* provides a connection with the sea. The water in the lake is mainly fresh, but increases in salinity towards the *Bughaz* and during the summer. Most of the lake margins are covered with dense growths of *Typha* and *Phragmites*, which cover about 50% of the lake's area. Salt marshes, salinas and high dunes as well as some orchards are found on the sandbar separating the lake from the Mediterranean. Lake Idku supports a fishery of moderate importance.

■ IMPORTANCE FOR BIRDS

Lake Idku is of moderate importance

for both wintering and breeding waterbirds. In winter 1989/1990 a total of 22,549 waterbirds was counted (Meininger & Atta 1994). The lake probably also supports important numbers of breeding birds associated with reed swamps, such as: Purple Gallinule, Little Bittern and Senegal Coucal.

A4iii MORE THAN 20,000 WATERBIRDS

22,549 waterbirds were counted in the winter of 1989/90

■ SIGNIFICANT CONSERVATION ISSUES

Lake Idku suffers from the same ailments that affect other Delta wetlands: drainage and land reclamation, pollution, disturbance, waterbird catching, etc. Habitat loss through land reclamation is certainly the most serious of these threats. Lake Idku has been reduced to less than half its original size.

08 Lake Maryut

Location: 31° 04' - 31° 10'N 29° 52' - 29° 56'E
Size: 60 km²
Governorate: Alexandria
IBA criteria: A4i



■ PROTECTION STATUS

Not protected.

■ DESCRIPTION

Lake Maryut is the westernmost of the northern Delta wetlands, though its history and origin are different. Formerly, the lake was fairly large but late in the nineteenth century the western half was cut off by a railway embankment (Abu El Izz 1971) and transformed into an extensive salina, now known as Malahet Maryut, which is seasonally flooded (usually during winter). Today, the remaining part of this lake is made up of several fragments, dissected by roads and embankments, and lies practically within the boundaries of greater Alexandria and its sprawling suburbs. What remains of the lake proper is brackish, receiving agriculture drainage water through several drains (the most important of these is the Qala Drain), as well as large quantities of municipal and industrial effluent from the city of Alexandria. The lake has no direct connection with the Mediterranean, and is maintained at a level of about 2.8 m below sea level by a pumping station at El Max. Much of the lake shore is fringed by extensive *Typha* and *Phragmites* marshes. The lake still supports a fishery, with *Tilapia* sp. making

up most of the production.

■ IMPORTANCE FOR BIRDS

The importance of Lake Maryut for birds has diminished greatly over the last two or three decades due to habitat loss, ecological changes and increased disturbance and hunting pressure. Numbers of wintering waterbirds are modest; in winter 1989/90 a total of about 10,000 waterbirds was counted (Meininger & Atta 1994). Little is known about the lake's importance for staging of migrants. Several waterbirds are known to breed including: Little Grebe, Purple Gallinule, Moorhen, Little Bittern, Kentish Plover and Little Tern. Little is known, also, about the numbers involved, but it is not expected that there would be any significant concentrations, with the exception of the population of Little Tern, which is on the order of 150 pairs.

A4i 1% OR MORE OF POPULATION

Great White Egret	348 wintering
Little Gull	866 wintering

■ SIGNIFICANT CONSERVATION ISSUES

Lake Maryut has been reduced by over 75% of its original area (Meininger & Atta 1994) and is still shrinking. The main causes for the

diminishing area today are urban encroachment and solid waste dumping from the rapidly growing Alexandria. The lake is eutrophic and is the most polluted wetland in Egypt. Agricultural drainage water, discharged into the lake, is heavily contaminated with pesticides and fertilisers,

as are the huge quantities of largely untreated municipal and industrial waste water. The level of disturbance is particularly high because of the very close proximity of Alexandria's urban and industrial sprawl. The outlook for the future of this wetland is rather grim.

09 Lake Qarun Protected Area

Location: 29° 24' - 29° 33'N 30° 25' - 30° 51'E
Size: 250 km²
Governorate: El Fayoum
IBA criteria: A4i & A4iii



■ PROTECTION STATUS

Protected Area. Declared by Prime Ministerial Decree 943/1989.

■ DESCRIPTION

Lake Qarun occupies the deepest part of the Fayoum Depression, located some 220 km south of the Mediterranean. In 1992 the elevation of the lake surface was 43.5 m below sea level and mean water depth was 4.2 m. The lake is bordered by agricultural land to the south and desert to the north. There are several lagoons and bays along the southern and northern shores of the lake, some of which hold mud or salt flats of various sizes. El Qarn, the only sizeable island in the lake, is almost 2 km². Formerly, Qarun was a much larger fresh water lake with dense marsh vegetation along its shores. The main source of water for the lake is drainage from irrigated land, which it receives through two major drains: El Batts and El

Wadi. With the intensification of cultivation and irrigation since the early part of this century, the salt load of the water reaching Qarun has increased significantly. As the only outflow for the water is evaporation, salinity is continually increasing. Today, Lake Qarun is slightly more saline than sea water (about 40 g/l) and salinity increases at the rate of 0.5 g/l annually (Euroconsult 1992b). The highest salinity is recorded in the west and north of the lake, while swamp and marsh vegetation is now restricted to the vicinity of drain outlets, on the east and south shores of the lake. Nilotic aquatic fauna has mostly disappeared, being replaced by many marine species that have been introduced from the Mediterranean to restock the ecologically modified lake. Between 1980 and 1990 Lake Qarun produced an average of 956 tons of fish and shrimps annually, of which 40% was *Tilapia* sp. and 36% shrimps (Euroconsult 1992b).

■ IMPORTANCE FOR BIRDS

In the winter Lake Qarun holds large numbers of waterfowl. A total of 32,665 were counted in the winter of 1989/90 (Meininger & Atta 1994). Grebes are particularly abundant. There are also large numbers of Teal, Tufted Duck and European Coot. At least ten species of waterbirds are known to breed, the most prominent of which are: Cattle Egret, Spur-winged Plover, Kentish Plover, Little Tern and Slender-billed Gull. The last species started breeding at Lake Qarun in the early 1990's and in summer 1998 an estimated 1,000 pairs nested on El Qarn Island.

A4i 1% OR MORE OF POPULATION

Black-necked Grebe	3,516 wintering
Slender-billed Gull	>1,000 pairs breeding and 2,000 wintering
Spur-winged Plover	>150 pairs breeding

A4iii MORE THAN 20,000 WATERBIRDS

32,665 waterbirds were counted in the winter of 1989/90

the lake into several segments, where salinity in at least some parts of the lake (near sources of fresh water), could be maintained at favourable levels, while other parts would be sacrificed.

Unregulated tourist developments particularly along the southern shores of the lake are destroying the best waterbird habitats, particularly mudflats and salt marshes and will lead to increased disturbance to birds. El Fayoum has traditionally been a popular site for European hunting parties visiting Egypt in winter. Although there have been recent attempts to control and regulate hunting, evidence indicates that there are many violations, both by foreign hunting parties and by natives who kill many protected species and cause much disturbance to both wintering and breeding birds.

In the summer of 1998, some 3,000 fledgling Slender-billed Gull were found dead on El Qarn Island. Despite statements by Ministry of Agriculture experts that starvation and parasites caused the mass death, it is almost certain, because of the scale and suddenness of the incident, that the birds were poisoned, probably by local fish farmers. This illustrates the type and scale of the conflicts that arise between man and wildlife in many of Egypt's wetlands.

■ SIGNIFICANT CONSERVATION ISSUES

The increasing salinity of the lake is constantly changing its ecology, and is likely to become too high for many life forms to continue to exist. This will ultimately reduce its importance as a habitat for most waterbird species. Currently there are plans under consideration which entail the division of

10 Wadi El Rayan Protected Area

Location: 29° 05' - 29° 20'N 30° 20' - 30° 25'E
Size: 710 km²
Governorate: El Fayoum
IBA criteria: A1 & A4i



■ PROTECTION STATUS

Protected Area. Declared by Prime Ministerial Decree 943/1989. There is an on-going, Italian funded project, in co-operation with the EEAA, to develop the management and infrastructure of the Protected Area.

■ DESCRIPTION

Wadi El Rayan was originally an arid desert depression located to the south west of Fayoum, with an average elevation of 43 m below sea level and a maximum depth of 64 m below sea level. As of 1973, excess drainage water from Fayoum was diverted into the depression, flooding large parts of it. Two large lakes were formed as a result. The first lake reached its current level of 5 m below sea level in 1978 (Euroconsult 1992b). The second lake, which lies at a lower elevation, has a current, estimated, water level of 20 m below sea level and is still in the process of filling. It is expected that the water level in the lake will be allowed to reach 13 m below sea level (Euroconsult 1992b). About 0.25 km³ of drainage water reaches the lakes of Wadi El Rayan annually (salinity 1 g/l) (Euroconsult 1992b). This is carried through a canal and a tunnel, which link the first lake and El Wadi Drain and flows from the first lake to

the second via a shallow, swampy canal and a small waterfall. Because water levels in the first lake have been stable for a considerable length of time, a very dense growth of *Phragmites australis* and *Tamarix nilotica* has developed along the shores of this lake. In contrast, the second lake has scant cover along its shores because of the constantly, though slowly, rising level of water in it. Salinity is also slowly rising in the second lake (which has no outflow) as a result of evaporation. The salt level in the lake is currently about 2.5 g/l, but it is only a matter of time before it becomes as saline as Lake Qarun (Euroconsult 1992b). Salinity is expected to remain stable in the first lake, since it is constantly flushed.

The lakes of Wadi El Rayan produced an average of 477 tons of fish annually between 1980 and 1990, composed mostly of *Tilapia* sp. and *Mugil* sp. (Euroconsult 1992b).

To the west of the lakes of Wadi El Rayan is a further, shallower, sandy depression that supports three natural springs and extensive desert scrub. A limestone escarpment surrounds the depression on all sides except the east, where it is closed off by a series of high longitudinal dunes. The vegetation is dominated by *Alhagi maurorum*,

Nitraria retusa, *Calligonum comosum* and *Tamarix* sp. This is an excellent and rare example of an undeveloped Saharan oasis.

■ IMPORTANCE FOR BIRDS

The lakes of Wadi El Rayan have become fairly important wintering grounds for waterbirds and appear to be increasing in importance. 12,600 waterbirds were counted in January 1995 (Baha El Din per. obs.). Most numerous were: Great Crested Grebe, Black-necked Grebe, Tufted Duck, Northern Pochard and European Coot. The second lake holds more waterbirds than the first, because of its larger size and its greater isolation. The second lake also supports a substantial breeding population of Purple Gallinule. Other breeding species include: Little Grebe, Little Bittern, Little Egret, Moorhen and Clamorous Reed-Warbler. The desert habitats of Wadi El Rayan spring area also holds a number of Saharo-Sindian biome-restricted species. At least four of these species are known or are expected to breed in the area. These are: Sooty Falcon, Pharaoh Eagle-owl, Mourning Wheatear and Hoopoe Lark.

are found in the desert habitats of Wadi El Rayan. The Slender-horned Gazelle (EN) occurred until the mid 1980s, but has probably become locally extirpated. Dorcas Gazelle (LR) is still found in the area in small numbers, but is rapidly declining. Both Fennec Fox (DD) and Rüppell's Sand Fox (DD) are scarce and are also declining due to illegal hunting.

■ SIGNIFICANT CONSERVATION ISSUES

The greatest threat to the area comes from a reclamation project (in progress) which aims at cultivating 15,000 feddan of desert, right in the centre of Wadi El Rayan Protected Area. In addition there is a possibility that water flow to the lakes will be severely reduced in the future as part of the drainage water recycling policy the government is applying to conserve water. This would lead to a great reduction in the size of the second lake or its complete disappearance. Organic matter discharged from fish farms under establishment in and around the lakes will likely lead to a decrease in water quality.

Illegal hunting and especially falcon catching are still evident, despite the efforts of the EEAA to control the problem. The growing number of fisherman and fish farms is causing increased disturbance to wintering waterbirds. The recently established tarmac road, encircling the two lakes of Wadi El Rayan, has made the area more accessible, drastically increasing the opportunities for illegal hunting and habitat destruction.

■ A1 GLOBALLY THREATENED SPECIES

Vulnerable

Ferruginous Duck uncommon winter visitor

A4i 1% OR MORE OF POPULATION

Purple Gallinule 100 pairs breeding estimated

■ IMPORTANCE FOR OTHER SPECIES

Mammals: four threatened mammals

11 Wadi El Natrun

Location: 30° 17' - 30° 38'N 30° 02' - 30° 30'E
Size: 20 km² (area of wetlands)
Governorate: Behaira
IBA criteria: A4i



■ PROTECTION STATUS

Not protected.

■ DESCRIPTION

An elongate, narrow depression, about 50 km long with an average width of 8 km (total area over 200 km²), oriented from SE to NW and situated west of the Nile Delta, about 90 km south of the Mediterranean. It is characterised by a series of nine small lakes that are scattered along its general SE to NW axis. The water in the lakes originates from two main sources: seepage and springs in the bottoms of some lakes (Zahran & Willis 1992). As the depression is hydrostatically linked with the Delta, lateral seepage is generally from the north-east, resulting in the creation of wet salt marshes on the north-eastern shores of the lakes, while, in contrast, the southern and western shores are distinctly barren. Water in the lakes is hypersaline fluctuating seasonally according to the depth of the water table. *Typha* swamps occur at localities along the shores of the lakes where there is a plentiful fresh water supply. *Juncus acutus* and *Cyperus laevigatus* dominate the wet salt marshes on the waterlogged eastern shores (Zahran & Willis 1992). The latter species carpets most of the marsh areas in a dense cover that does not exceed a few centimetres because of severe graz-

ing pressure. This, however, creates one of the most characteristic and attractive habitats for waterbirds in Wadi El Natrun. Mud flats and salt-encrusted *sabkhas* fringe parts of the lake's shores.

■ IMPORTANCE FOR BIRDS

Wadi El Natrun is of modest importance for waterbirds. In winter 1989/90 a total of about 7,700 waterbirds was counted (Meininger & Atta 1994). Wadi El Natrun is known to hold some of the largest winter concentrations in Egypt of Shelduck, Common Snipe, Curlew, Little Stint and Kentish Plover. However, with the exception of the latter, none are known to occur in internationally significant numbers. The area is also of moderate importance for migrant waterbirds; in spring 1990 a total of about 7,800 waders was counted (including some resident species) (Meininger & Atta 1994). The area might be more important for staging migrants during autumn. Common Crane is known to pass through and rest in significant numbers during spring and autumn. Some 12 species of waterbirds are known or expected to breed in Wadi El Natrun, including the largest breeding population of Kittlitz's Plover known in Egypt. Marbled Teal previously bred in Wadi El Natrun, at least until

1912. There is no recent indication of breeding. The last observation of the species in Wadi El Natrun was in 1986 (Goodman & Meininger 1989) and it is unlikely that it will breed again unless disturbance and hunting pressure are curbed.

A1 GLOBALLY THREATENED SPECIES

Near Threatened

Great Snipe scarce winter visitor

A4i 1% OR MORE OF POPULATION

Kentish Plover	1,120 wintering
Kittlitz's Plover	50-100 pairs breeding and 45 wintering
Spur-winged Plover	150 pairs breeding

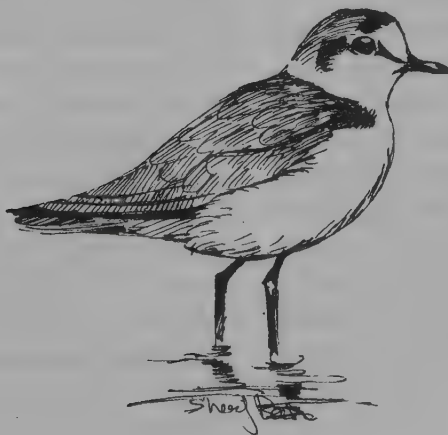
■ IMPORTANCE FOR OTHER SPECIES

Flora: *Typha elephantina*, one of the prominent components of marsh flora in Wadi Natrun, is known nowhere else in Egypt (Zahran & Willis 1992, Boulos 1995). After being considered extinct in Egypt, *Papyrus Cyperus papyrus* was rediscovered in Wadi El Natrun at Lake Um Risha in 1971 (Täckholm 1974), where the only remaining wild stand in the country is reported. Reptiles: this is the only

known locality where the rare Grass-loving Lizard is found in Egypt. Mammals: the Slender-horned Gazelle (EN) has occurred in the desert habitats of Wadi El Natrun (Osborne & Helmy 1980), but has become extirpated from the region during the past three decades. The apparently rare, endemic shrew, Flower's Shrew (EN), was last recorded from Wadi El Natrun (Goodman 1985).

■ SIGNIFICANT CONSERVATION ISSUES

Rapidly expanding groundwater-dependent agricultural reclamation projects in and around Wadi El Natrun are threatening to lower the water table significantly. This will (if uncontrolled) eventually dry up the lakes of Wadi El Natrun. Increased grazing pressure and reed cutting (for various domestic uses) are threatening the remaining reed swamps with extermination. The growing population, along with an increase in tourism and industrial development, is leading to greater urbanisation, pollution, disturbance and hunting pressure.



KENTISH PLOVER

12 Upper Nile

Location: 24° 28' - 25° 51'N 32° 28' - 32° 57'E

Size: c. 150 km²

Governorate: Luxor, Aswan

IBA criteria: A1, A4i & A4iii



■ PROTECTION STATUS

Partly protected. All the islands in the Nile River were declared a protected area by Prime Ministerial Decree 1969/1998.

■ DESCRIPTION

The site comprises a portion of the Nile River extending some 190 km between Luxor and Kom Ombo. The river forms an elongate wetland that meanders through the densely populated agricultural landscape of the Nile Valley. Since the closure of the High Dam in 1964, the Nile down stream from Aswan experiences water level changes of only small amplitude. This has allowed dense swamp vegetation, mainly *Phragmites* and *Typha*, to become established in many places along the riverbanks, which were previously largely devoid of vegetation. Bare sandy or muddy banks come into existence seasonally depending on the water level, which is lowest in winter. A number of islands are found along this stretch of the river, many of which hold good reed swamp vegetation. These are particularly attractive to resting waterbirds. The river immediately above the Isna Barrage appears

to hold the largest numbers of waterbirds in this region. About 40% of the arable land in this section of the Nile Valley is cultivated with sugar cane. Other crops are date palms, maize, wheat and alfalfa (Aswan Governorate 1993). Fishing probably provides important income to many families inhabiting that region. In 1990, 589 boats and 1,178 fishermen were active on the Nile in Aswan Governorate (Aswan Governorate 1993).

■ IMPORTANCE FOR BIRDS

The stretch of the Nile River in Egypt with the highest concentrations of wintering waterbirds. In the winter of 1989/1990 over 20,000 waterbirds were counted in this region (Meininger & Atta 1994). Ferruginous Duck winters in internationally important numbers. Red-crested Pochard winters regularly in small numbers, while Marbled Teal is an irregular and rare winter visitor, last recorded from the area in 1983 (Goodman & Meininger 1989). This section of the Nile Valley is likely to be of importance for staging waterbirds and other migrants, such as White Stork, during migration seasons.

A1 GLOBALLY THREATENED SPECIES

Vulnerable

Ferruginous Duck regular winter visitor

A4i 1% OR MORE OF POPULATION

Ferruginous Duck Maximum of 730
counted in March 1997

A4iii MORE THAN 20,000 WATERBIRDS

21,100 waterbirds were counted in the winter of
1989/90

■ **SIGNIFICANT CONSERVATION ISSUES**

Disturbance caused by a growing number of fishermen and tourist Nile

cruises is increasing. There is a substantial water pollution problem caused by untreated discharge from sugar, phosphate and dairy factories, as well as from urban areas (Aswan Governorate 1993). Erosion of the Nile banks has become a problem since the construction of the High Dam. As a mitigating measure, long stretches of the Nile banks are being encased with rocks. This will alter the natural condition of this part of the Nile and potentially reduce its importance for waterbirds.

13 Aswan Reservoir

Location: 23° 58' - 24° 02' N 32° 51' - 32° 57' E

Size: c. 15 km²

Governorate: Aswan

IBA criteria: A1



■ **PROTECTION STATUS**

Not protected.

■ **DESCRIPTION**

The Aswan Reservoir is the segment of the Nile located between the old Aswan Dam (completed in 1920) and the High Dam. It is 7 km in length and ranges between 1.5 and 4 km in width. The shores are very steep and rocky, with many *khors*, most of which are on the eastern side. Several small, granite islands (part of the First Cataract) are found in the northern section of the reservoir. The water in the reservoir is maintained at a fairly stable level allowing a narrow fringe of vegetation to grow. *Ceratophyllum demersum* and *Potamogeton crispus* are

the dominant aquatic plants (Springuel 1985a).

■ **IMPORTANCE FOR BIRDS**

Ferruginous Duck winters in internationally important numbers. Over 6,000 waterbirds were counted in winter 1989/1990 (Meininger & Atta 1994), while about 3,000 were counted in February 1995 (Baha El Din pers. obs.). The most numerous birds were: Wigeon, Northern Pochard, Tufted Duck and European Coot. Characteristic breeding birds include: Moorhen, Spur-winged Plover and Pied Kingfisher. Little Egret and Common Squacco Heron breed in the vicinity of the reservoir.

A1 GLOBALLY THREATENED SPECIES

Vulnerable

Ferruginous Duck Regular winter visitor. 142 counted in February 1995

■ **SIGNIFICANT CONSERVATION ISSUES**

Urban encroachment on neighbouring

shores, and resultant pollution and disturbance are threatening to diminish the value of this area as a water-bird habitat. Shooting of waterbirds, particularly by visiting European hunters, is reported to take place regularly during winter.

14 Lake Nasser

Location: 22° 00' - 23° 58'N 31° 20' - 33° 15'E

Size: 5,400 km²

Governorate: Aswan

IBA criteria: A1, A4i & A4iii



■ **PROTECTION STATUS**

Not protected, although Wadi Allaqi Protected Area that encompasses a section of Khor Allaqi (part of Lake Nasser) was declared a protected area by Prime Ministerial Decree 945/1989.

■ **DESCRIPTION**

Lake Nasser was formed as a result of the construction of the High Dam, first closed in 1964 and completed in 1969. It is an elongate body of water some 496 km long, 196 km of which are in Sudan (Lake Nubia), with an average width of 15 km. The water volume in the lake fluctuates greatly, seasonally and from year to year, depending on the net annual volume of water it receives. The highest water level of 181.30 m (above sea level) was reached in November 1998, while the lowest level recorded so far was 150.60 m in July 1988 (Yaseen 1999). In autumn 1996 water entered, for the first time, the Tushka Spillway inundating parts of the Tushka Depression in the Western Desert and creating a huge

temporary wetland, which lasted for almost a year. In 1998 the depression was inundated again, creating an even larger wetland. The spillway was built as a safety measure to divert water from behind the High Dam when water exceeded the maximum planned level of 178 m. Seasonal fluctuation in water level ranges between five and 10 m, reaching its highest in autumn then gradually receding to its lowest level in summer, depending on the amount of water released down stream from the dam, evaporation and the amount received from upstream. Table 10 illustrates the great change in the dimensions of Lake Nasser at various water levels.

Lake Nasser is one of the world's largest man-made lakes. It is of vital importance for the country, representing Egypt's main reservoir of fresh water. Lake Nasser and the region adjoining it are seen by some of Egypt's planners and scientists as the future food basket for the country. To

TABLE 10. DIMENSIONS OF LAKE NASSER AT LOW AND HIGH CAPACITY
(FROM ENTZ 1976)

Water level (m. a. s. l.)	160	180
Volume (km ³)	55.6	132.5
Surface area (km ²)	2,585	5,248
Mean width (km)	8.9	18
Mean depth (m)	21.5	25.2
Maximum depth (m)	110	130
Shoreline length (km)	5,380	7,844

date, the region is still largely uninhabited by man. The irregular and huge fluctuations in water level of the lake, poor soils, steep shoreline and inaccessibility are some of the factors that have led to the failure of almost all development efforts along the lake shores.

However, this situation is changing rapidly. A huge and ambitious agricultural development project (known as the South Valley or Tushka Project) was initiated in 1996 to reclaim and cultivate several hundred thousand *feddans* of the Western Desert using water from Lake Nasser. The project involves the installation of the world's largest pumps, which will carry water from the lake into a 300 km long canal. It was envisaged that the canal would extend all the way to Kharga Oasis in the heart of the Western Desert, and possibly beyond. Work on the project has already progressed substantially and it is planned that the pumps will be operational by the year 2002.

Perhaps one of the most outstanding features of Lake Nasser is the very complex nature of its shoreline, composed of numerous *khors*, which are, essentially, inundated desert wadis.

Most are narrow and meander into the desert for long distances, although some are very wide. There are some 85 major *khors*, 48 on the eastern side of the lake and 37 on the western side (Aswan Governorate 1993). Allaqi, Kalabsha and Tushka are the three largest *khors* in Lake Nasser, making up a large part of its total area. *Khors* support the richest habitats in the lake. Their shallow waters support aquatic flora and provide good breeding grounds for fish, and their often gently sloping shores allow vegetation to grow. Much of the rest of the lake's shores are steep and rocky with little vegetation. A vast number of islands, representing the tops of former hills, of various sizes are scattered throughout the lake. The number, location and size of these varies greatly with fluctuations in lake level.

The flora of the lake banks is largely dominated by *Tamarix nilotica*, which grows in thin bands along the lake's shoreline, forming dense growths at favourable habitats, usually in *khors*. Only a few plant species tolerate the continual alternation between flooding and desiccation, which dominates the ecology of the lake shores. When the

lake water recedes, extensive areas of waterlogged land are exposed and rapidly become colonised by dense *Tamarix* growths. Conversely, when the water level rises, vast areas of *Tamarix* bush are inundated, creating swamp-like micro-habitats that provide excellent feeding grounds for waterbirds. Dominant aquatic vegetation in the shallow margins of the lake includes *Najas armata* and *N. horrida* (Springuel 1985b).

Lake Nasser is one of the most important sources of freshwater fish in Egypt, contributing from 25% to 40% of the total inland fisheries production. In 1992 the catch amounted to about 26,000 tons, and the number of fishermen was nearly 3,000. *Tilapia nilotica* and *T. galilaea* dominate the fish catch from the lake, contributing about 97%-98% of the total. Other commercial fish species include *Bargus bayad* and *Latus niloticus* (Aswan Governorate 1993).

■ IMPORTANCE FOR BIRDS

Lake Nasser has become increasingly important as a wintering area for migratory Palearctic waterbirds. During January and February 1995 over 56,000 waterbirds were counted on about 20% of the lake (Baha El Din pers. obs.). Thus, the total number of waterbirds wintering in the entire lake could be in excess of 200,000, making it one of the most important wetlands in Egypt. Most abundant of these were: Black-necked Grebe, White Pelican, Tufted Duck, Northern Pochard, Northern Shoveler, Wigeon and Black-headed Gull. Characteristic breeding birds include: Egyptian Goose, Black Kite, Senegal Thick-knee,

Kittlitz's Plover, Spur-winged Plover, Crested Lark and Graceful Prinia. This is the only area where African Skimmer and African Pied Wagtail are known to breed in Egypt. During the summer months there is a significant influx of Yellow-billed Stork and Pink-backed Pelican into Lake Nasser.

A1 GLOBALLY THREATENED SPECIES

Vulnerable

Ferruginous Duck Uncommon winter visitor.
33 counted in winter of 1995

A4i 1% OR MORE OF POPULATION

Black-necked Grebe	5,811 wintering
White Pelican	1,157 wintering
Tufted Duck	19,281 wintering
Northern Shoveler	9,437 wintering

A4iii MORE THAN 20,000 WATERBIRDS

56,000 waterbirds were counted in winter of 1995

■ IMPORTANCE FOR OTHER SPECIES

The newly established habitats in and around Lake Nasser have become of great importance for several wildlife species that have lost most of their habitats elsewhere in Egypt. Reptiles: the lake holds the only remaining populations of Nile Crocodile in Egypt, which is found in substantial numbers. Good populations of the Nile Monitor and Nile Soft-shelled Turtle also inhabit the lake. Mammals: the shores of Lake Nasser probably now support one of the largest populations of Dorcas Gazelle (LR) in Egypt, a species that is rapidly declining throughout the country.

■ SIGNIFICANT CONSERVATION ISSUES

The adoption of inappropriate development strategies and techniques in this unique and vital region, Lake Nasser being the main reservoir of

fresh water in Egypt, could be ecologically disastrous.

Mismanagement of agricultural pests and over-use of pesticides are potentially very grave problems for wildlife and the environment along the shores of Lake Nasser. Species such as Egyptian Goose, Crested Lark and even Dorcas Gazelle are considered pests around Lake Nasser and have been persecuted by many means, including poisoning. This has led, in many instances, to the killing of vast numbers of other, non-target wildlife.

Already, workers, at the South Valley Development Project have been reported in the press as 'purifying' newly settled desert areas of 'vermin' by poisoning. Victims are reported to be mostly foxes and rodents.

Shooting of waterbirds is reported to take place regularly during winter, particularly by visiting European hunters, who take both game and non-game (protected) birds. Illegal hunting, collection and trade in protected species (mainly Nile Crocodile, Nile Monitor and Dorcas Gazelle) is widespread.

15 Hurghada Archipelago

Location: 27° 05' - 27° 51'N 33° 32' - 34° 05'E
Size: c. 1500 km² (including adjacent marine waters)
Governorate: Red Sea
IBA criteria: A1, A4i & A4ii



■ PROTECTION STATUS

Partly protected. Islands south of Lat. 27°15'N are protected as part of the Elba National Park, declared by Prime Ministerial Decree 450/1986, adjusted by Prime Ministerial Decree 1186/1986 and Prime Ministerial Decree 642/1995. Islands further north are not protected, but are proposed for protection (Baha El Din 1998). EEAA, with support from USAID, is developing the management and infrastructure of the island protectorates from Hurghada south and will expand their program to the north once those islands are protected.

■ DESCRIPTION

An archipelago of 22 uninhabited

islands, plus a handful of very small islets, scattered from the Straits of Gubal at the mouth of the Gulf of Suez to Hurghada (Table 11). Most are small or medium sized and fairly flat coralline islands, such as Tawila and Ashrafi, but some are quite large and hilly. Shadwan is the largest of the Egyptian Red Sea islands being about 56 km² in area and reaching some 300 m at its highest point. Many of these islands have an igneous core ringed by fossil coral reefs that were raised and exposed by uplifting of the core (Goodman & Meininger 1989). The igneous core is visible at the centre of many of the larger islands. Typically, the islands have elevated rocky shores on their north-east sides and gently

sloping sandy shores on the south-west sides. This is, most probably, a result of erosion by prevailing north-easterly winds and currents. Extensive intertidal flats (coral table) fringe some of the islands, particularly on the southern and western shores, while deep waters surround others.

Vegetation is sparse and consists mainly of saltmarsh flora, including *Halocnemum strobilaceum*, *Arthrocnemum glaucum* and *Nitraria retusa*. The islands of North Qeisum, Abu

Mingar, Ashrafi and Shadwan have small to medium sized stands of mangrove *Avicennia marina*.

■ IMPORTANCE FOR BIRDS

The Hurghada Archipelago holds the largest known breeding population of White-eyed Gull in the world. A total of 6,500 adults were counted attending the sprawling Hurghada city rubbish dump in May 1996 (Baha El Din pers. obs.). It is almost certain that all these birds breed on the Hurghada

TABLE 11. MAIN ISLANDS OF THE HURGHADA ARCHIPELAGO

Island	Approximate location	Approximate size km ²	No of breeding species	Protection Status
Ghanim	27°46'N 33°36'E	7.5	1	None
Ashrafi	27°47'N 33°41'E	3	13	None
North Qeisum	27°42'N 33°41'E	7.5	6	None
South Qeisum	27°41'N 33°43'E	12	8	None
Gubal El Saghir	27°41'N 33°48'E	4	2	None
Gubal El Kabir	27°39'N 33°40'E	15	3	None
Gemsa	27°39'N 33°40'E	1	?	None
Um El Heimat El Saghir	27°39'N 33°36'E	2	6	None
Um El Heimat El Kabir	27°40'N 33°38'E	4	11	None
Tawila	27°35'N 33°48'E	35	10	None
Um Basian	27°38'N 33°47'E	0.5	1	None
El Hamra	27°34'N 33°46'E	0.5	4	None
Siyul El Saghir	27°33'N 33°51'E	0.02	0	None
Siyul El Kabir	27°34'N 33°53'E	0.25	3	None
Shadwan	27°30'N 34°00'E	56	6	None
Fanadir Islets	27°18'N 33°49'E	0.01	0	None
Um Qamar	27°21'N 33°54'E	0.25	4	None
Giftun El Saghir	27°12'N 33°58'E	5	3	Protected
Giftun El Kabir	27°14'N 33°55'E	35	8	Protected
Abu Mingar	27°13'N 33°52'E	3	6	Protected
Abu Rimathi	27°10'N 33°59'E	0.5	4	Protected
Um Gawish El Saghir	27°09'N 33°51'E	0.5	1	Protected
Um Gawish El Kabir	27°10'N 33°53'E	1	10	Protected

Archipelago and, probably, represent only part of the local breeding population. The fact that all birds counted were adults in breeding plumage indicates that the total population of the area, if immatures and juveniles are accounted for, should be much larger than the previous estimate of 1,500-2,000 pairs (Jennings *et al.* 1985). The current estimate made here for the Hurghada Archipelago is of at least 3,000 breeding pairs, or a total population of some 10,000 birds. Rose & Scott (1994) estimate the world population of White-eyed Gull at 20,000 birds.

In addition, the Hurghada Archipelago supports a considerable diversity of other breeding waterbirds and seabirds. At least 15 species are known to breed or to have bred: Brown Booby, Red-billed Tropicbird, Green-backed Heron, Reef Heron, European Spoonbill, Osprey, Sooty Falcon, Kentish Plover, Hemprich's Gull, Caspian Tern, Swift Tern, Lesser Crested Tern, Bridled Tern and White-cheeked Tern. An exceptionally large colony of the last species (about 1,150 pairs) was discovered in July 1996 on an islet off Tawila Island (Killian Mullarney pers. com.). These islands also appear to play an important role as a stepping stone for some soaring migrants crossing the mouth of the Gulf of Suez, with some birds landing on the islands.

A1 GLOBALLY THREATENED SPECIES

Vulnerable

White-eyed Gull [Common breeding resident]

A4i 1% OR MORE OF POPULATION

White-eyed Gull	3,000 pairs breed
White-cheeked Tern	1,500 pairs breed
Caspian Tern	200 pairs breed
Lesser Crested Tern	500 pairs breed

A4ii 1% OR MORE OF POPULATION

Sooty Falcon	44 pairs breed
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■ IMPORTANCE FOR OTHER SPECIES

Marine: The coral reefs found in this area are some of the richest in the world, supporting a diversity of life including endemic and endangered species. **Flora:** The mangroves found on the islands are among the most extensive in the northern Red Sea. **Reptiles:** Hawksbill Turtle (CR) and Loggerhead (EN) have been found breeding on several islands of the archipelago (Frazier & Salas 1984). **Mammals:** The Dugong (VU) is still reported to inhabit some shallow protected waters where there are sea grass beds. This species has virtually vanished from the area, because of catching pressure and disturbance by fishermen and tourists, and, undoubtedly, has suffered from the chronic oil pollution in the region.

■ SIGNIFICANT CONSERVATION ISSUES

During the past decade the Hurghada region has witnessed an unprecedented development boom. From a quaint, little town with two hotels, to a sprawling, densely populated city with tens of hotels and holiday resorts. Now, tourist developments extend from about 30 km north of Hurghada nearly all the way to Safaga. All this development has taken place with little regard for the natural environment, obviously with severe negative impact, particularly on littoral and marine habitats.

Breeding success on offshore islands is probably severely compromised by increased tourist activity in the vicinity. Tourists landing on the islands during the breeding season cause disturbance to seabird colonies. Egg and chick collection by local

fishermen is known, but is thought not to be widespread, although the impact could be considerable. There is a constant threat of inappropriate activities on the islands; for example, the use of dune buggies for recreational purposes has been reported from many islands (Andrew Grieve pers. com.).

Oil pollution is a chronic problem in this region of the Red Sea and one of the most serious for wildlife. Badly operated oil production facilities contribute the most, although the busy shipping lanes of the Gulf of Suez are

an important source of oil pollution as well as solid waste.

The use of dynamite in submarine oil exploration and fishing was a common practice in the past and might still be practised in some parts of the Red Sea today. The impact of this destructive technique on the marine environment is devastating. Feral cats have been introduced on several islands by army personnel stationed there. The impact of these and other introduced fauna on nesting birds is not known but could be very destructive.

16 Tiran Island

Location: 27° 56'N 34° 33'E

Size: 31 km²

Governorate: South Sinai

IBA criteria: A1 & A4i

■ PROTECTION STATUS

Protected. Part of the Ras Mohammed National Park, declared by Prime Ministerial Decree 1068/1983, adjusted by Prime Ministerial Decree 2035/1996.

■ DESCRIPTION

A large, crescent-shaped island situated at the mouth of the Gulf of Aqaba. The northern part of the island is flat, while the southern larger part is fairly hilly and contains the highest point on the island, 524 m. A fairly large mangrove *Avicennia marina* stand is found on the northern shore of the southern part of the island. Extensive coral reefs



fringe the island on the north and east, while the western shore overlooks the Straits of Tiran.

■ IMPORTANCE FOR BIRDS

Seven bird species are known to breed on Tiran Island: Reef Heron, Green-backed Heron, European Spoonbill, White-eyed Gull, White-cheeked Tern, Lesser Crested Tern and Caspian Tern. In addition, Osprey is a widespread breeder. Tiran's population of this species (15-20 pairs) is the largest in the country. Three or four pairs of Sooty Falcon also breed on the Island (Goodman & Meininger 1989).

A1 GLOBALLY THREATENED SPECIES

Vulnerable

White-eyed Gull [Common breeding resident

A4i 1% OR MORE OF POPULATION

White-eyed Gull At least 50 breeding pairs

■ **IMPORTANCE FOR OTHER SPECIES**

Reptiles: Green Turtle (EN) has bred on the island (Frazier & Salas 1984). Mammals: The shallow waters east of Tiran are said to have sea grass beds that are important grazing habitat for Dugong (VU) (Omar Hassan, Manager, Ras Mohammed National Park, pers. com.).

■ **SIGNIFICANT CONSERVATION ISSUES**

Oil pollution from passing vessels is a

serious threat to the birds of Tiran, particularly during the breeding season, when chicks of White-eyed Gull and other seabirds typically congregate along shores where they become exposed to contamination by floating oil. Growing tourist activity in the vicinity of Tiran is threatening to increase disturbance on the island and to degrade its habitats. However, the presence of land mines on some parts of the island deters many from visiting. Military personnel stationed on the islands are reported to have introduced feral cats that could potentially prey on fledging seabirds (Michael Pearson per. com.).

17 Wadi Gimal Island

Location: 24° 40'N 35° 10'E

Size: c. 2 km²

Governorate: Red Sea

IBA criteria: A1, A4i & A4ii



■ **PROTECTION STATUS**

Protected. Part of the Elba National Park, declared by Prime Ministerial Decree 450/1986, adjusted by Prime Ministerial Decree 1186/1986 and Prime Ministerial Decree 642/1995.

■ **DESCRIPTION**

Small coralline island, highest point 20 m. Fringed by coral reefs to the north east, while good sea grass beds are found offshore to the south west. A small mangrove stand is located in an isolated pool in the middle of the

island, and another occurs on the southwest shore, which slopes very gently, forming extensive mud flats. A moderate sized saltmarsh is found along the inland fringe of the coastal mangrove, and many isolated halophytic shrubs are scattered over the rest of the islands.

■ **IMPORTANCE FOR BIRDS**

Nine bird species are known to breed on Wadi Gimal island: Red-billed Tropicbird, Green-backed Heron, Reef Heron, European Spoonbill, Osprey,

Sooty Falcon, Hemprich's Gull, White-eyed Gull and Caspian Tern. The smaller number of breeding birds on this, and other southern Egyptian Red Sea islands, is probably due to the limited ornithological coverage of this region, rather than to a lack of birds or suitable breeding habitats.

A1 GLOBALLY THREATENED SPECIES

Vulnerable

White-eyed Gull Common breeding resident

A4i 1% OR MORE OF POPULATION

White-eyed Gull At least 75 breeding pairs

A4ii 1% OR MORE OF POPULATION

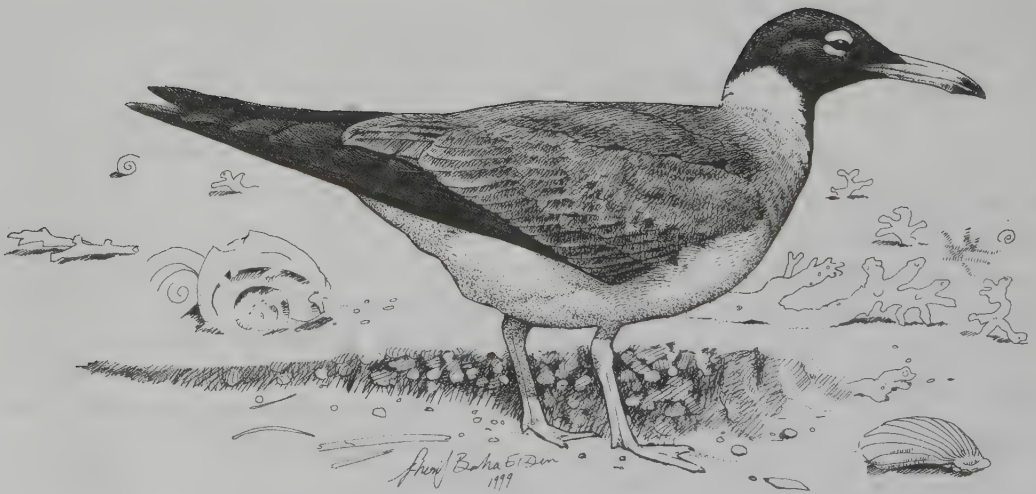
Sooty Falcon 10 breeding pairs

■ **IMPORTANCE FOR OTHER SPECIES**

Reptiles: Green Turtle (EN) has been reported nesting on the island (Frazier & Salas 1984). Mammals: the marine pastures surrounding the island are probably a good grazing habitat for Dugong (VU), as well as for Green Turtle.

■ **SIGNIFICANT CONSERVATION ISSUES**

Pollution, particularly by oil, and disturbance by an increasing number of tourists and fishermen, who occasionally collect eggs and young of breeding birds, are the main threats to birds on the island. The expanding tourist development taking place along the coast in this vicinity will probably increase threats to the island and its bird life.



WHITE-EYED GULL

18 Qulân Islands

Location: 24° 22'N 35° 23'E
Size: c. 3 km²
Governorate: Red Sea
IBA criteria: A1



■ PROTECTION STATUS

Protected. Part of the Elba National Park, declared by Prime Ministerial Decree 450/1986, adjusted by Prime Ministerial Decree 1186/1986 and Prime Ministerial Decree 642/1995.

■ DESCRIPTION

A small archipelago composed of four small coralline islands: Siyul, Showarit, Um Ladid and Mahabis, mentioned in ascending order of size. The islands are flat and sandy, usually with an elevated rocky northern shoreline, and a sloping southern shore. Showarit Island has a small mangrove stand. A fringe of living coral reef surrounds all the islands.

■ IMPORTANCE FOR BIRDS

Eight bird species have been found breeding on the islands: Red-billed Tropicbird, Green-backed Heron, Reef Heron, European Spoonbill, Sooty Falcon, Hemprich's Gull, White-eyed

Gull and Caspian Tern.

A1 GLOBALLY THREATENED SPECIES

Vulnerable

White-eyed Gull Common breeding resident

A4i 1% OR MORE OF POPULATION

White-eyed Gull At least 50 breeding pairs

A4ii 1% OR MORE OF POPULATION

Sooty Falcon 10 breeding pairs

■ IMPORTANCE FOR OTHER SPECIES

Reptiles: Loggerhead Turtle (CR) has been reported nesting on three of the islands (Frazier & Salas 1984).

■ SIGNIFICANT CONSERVATION ISSUES

As with the previous island, oil pollution and floating solid waste are an increasing problem along the shoreline. Because of the proximity of the islands to the mainland they are fairly accessible and are being disturbed by an increasing number of tourists and fishermen, the latter who occasionally collect eggs and young of breeding birds.

19 Zabargad Island

Location: 23° 37'N 36° 12'E
Size: c. 4.5 km²
Governorate: Red Sea
IBA criteria: A1, A4i & A4ii



■ PROTECTION STATUS

Protected. Part of the Elba National Park, declared by Prime Ministerial Decree 450/1986, adjusted by Prime Ministerial Decree 1186/1986 and Prime Ministerial Decree 642/1995.

■ DESCRIPTION

Zabargad (or St. John) is small triangular island rising abruptly from deep water in the Red Sea to about 235 m, some 60 km south-east of Ras Banas. It is geologically unique, amongst the Red Sea islands, in being composed of uplifted mantel and lower crustal metamorphic rocks (Coleman 1993). Vegetation is scant and mainly limited to halophytic flora.

■ IMPORTANCE FOR BIRDS

Eight bird species have been found breeding: Brown Booby, European Spoonbill, Sooty Falcon, White-eyed Gull, Caspian Tern, Lesser Crested Tern, Bridled Tern and White-cheeked Tern. In October 1994, about 150 pairs of Sooty Falcon were found nesting on the island (Tom Moore pers. com.), representing a significant proportion of the world population estimated at about 10,000 (Cramp 1980).

A1 GLOBALLY THREATENED SPECIES

Vulnerable

White-eyed Gull Common breeding resident

A4i 1% OR MORE OF POPULATION

White-eyed Gull At least 50 breeding pairs

A4ii 1% OR MORE OF POPULATION

Sooty Falcon An estimated 150 breeding pairs

■ IMPORTANCE FOR OTHER SPECIES

Marine life: The island is surrounded by some of the most spectacular coral reefs in the Egyptian Red Sea. Reptiles: Remains of 'hundreds' of marine turtles were found in December 1997 (Alain Jeudy de Grissac pers.com.), which probably come to the island to nest. According to Frazier & Salas (1984), most likely to be Green Turtle (EN).

■ SIGNIFICANT CONSERVATION ISSUES

The number of tourists visiting this island and its surrounding reefs increased dramatically in the past few years and started to degrade the coral reefs in the area and increase disturbance to nesting birds on the island. This led the EEAA, in collaboration with the coast guard, to close the area to visitors for about a year until better controls on human activities were in place.

20 Siyal Islands

Location: 22° 47'N 36° 11'E

Size: c. 2 km²

Governorate: Red Sea

IBA criteria: A1 & A4i



■ PROTECTION STATUS

Protected. Part of the Elba National Park, declared by Prime Ministerial Decree 450/1986, adjusted by Prime Ministerial Decree 1186/1986 and Prime Ministerial Decree 642/1995.

A1 GLOBALLY THREATENED SPECIES

Vulnerable

White-eyed Gull ☐ Common breeding resident.

A4i 1% OR MORE OF POPULATION

White-eyed Gull ☐ At least 70 breeding pairs

■ DESCRIPTION

Three small, flat, sandy, coralline islands, the largest of which is Siyal El Kabir. Coral reefs and shallow waters surround the islands.

■ IMPORTANCE FOR BIRDS

Five bird species have been found breeding: Osprey, White-eyed Gull, Hemprich's Gull, Caspian Tern and White-cheeked Tern.

■ IMPORTANCE FOR OTHER SPECIES

Reptiles: Hawksbill Turtle (CR) and Green Turtle (EN) breed in significant numbers on Siyal El Kabir Island. Leatherback Turtle (EN) might also breed locally (Goodman 1985).

■ SIGNIFICANT CONSERVATION ISSUES

Local fishermen collect turtle eggs (Goodman 1985), and probably bird eggs.



OSPREY

21 Rawabel Islands

Location: 22° 25'N 36° 32'E
Size: < 1 km²
Governorate: Red Sea
IBA criteria: A1



■ PROTECTION STATUS

Protected. Part of the Elba National Park, declared by Prime Ministerial Decree 450/1986, adjusted by Prime Ministerial Decree 1186/1986 and Prime Ministerial Decree 642/1995.

■ DESCRIPTION

Two small, flat, coralline islands with scattered halophytic vegetation including *Nitraria retusa* and *Tamarix nilotica* (Goodman & Meininger 1989). The islands are surrounded by coral reefs and shallow waters.

■ IMPORTANCE FOR BIRDS

Four bird species have been found breeding: Osprey, White-eyed Gull, Hemprich's Gull and Caspian Tern.

A1 GLOBALLY THREATENED SPECIES

Vulnerable

White-eyed Gull

Breeding resident

■ IMPORTANCE FOR OTHER SPECIES

Reptiles: Hawksbill Turtle (CR) or Green Turtle (EN) probably breed (Goodman 1985).

22 Nabq Protected Area

Location: 28° 03' -28° 30'N 34° 17' -34° 35'E
Size: 600 km²
Governorate: South Sinai
IBA criteria: A3



■ PROTECTION STATUS

Protected by Prime Ministerial Decree 1151/1992. The EU, in co-operation with the EEAA, has been involved in the development of the management and infrastructure of this Protected Area.

■ DESCRIPTION

The Nabq Protected Area encompasses a wide variety of ecosystems and

habitat types. The majority of the Protected Area is occupied by mountain and wadi desert habitats. Wadi Kid is the largest wadi in the area draining into the Gulf of Aqaba, where it forms a wide delta covered by alluvial gravel and sand, which forms small dunes around scrub near the coast. Along the sea front of the wadi delta there is an extensive mangrove

Avicennia marina stand, known as Shorat El Manqata. The mangroves are scattered along some 7 km of shoreline, forming, in places, very dense and extensive groves that contain fairly large trees. The mangrove trees are established on a shallow intertidal flat and protected by a wide reef top that is extensively exposed at low tide.

■ IMPORTANCE FOR BIRDS

The desert habitats of the Protected Area support a significant number of Saharo-Sindian biome-restricted species. At least 16 of these species, or 76% of Egypt's total Saharo-Sindian biome-restricted assemblage are known or expected to breed in the area.

The mangroves of Shorat El Manqata are of special importance for breeding waterbirds in the Gulf of Aqaba region. European Spoonbill, Green-backed Heron, Reef Heron and Osprey have all been found breeding in this mangrove stand. In April 1990 a single Slender-billed Curlew was reported from the Nabq area (Ragnar Kinzelbach pers. comm.).

A3 SAHARO-SINDIAN BIOME-RESTRICTED SPECIES

Sooty Falcon	Pale Crag Martin
Sand Partridge	Hoopoe Lark
Crowned Sandgrouse	Bar-tailed Lark
Lichtenstein's Sandgrouse	Desert Lark
Hume's Tawny Owl	Trumpeter Finch
Blackstart	Scrub Warbler
Yellow-vented Bulbul	Mourning Wheatear
Hooded Wheatear	
White-crowned Black Wheatear	

■ IMPORTANCE TO OTHER SPECIES

Flora: 134 plant species are known from the Protected Area. Nabq has

one of the most northerly mangrove stands in the world (Goodman & Meininger 1989) and the largest in the northern Red Sea. Further south, along the Red Sea coast proper between Hurghada and Marsa Alam, mangrove distribution is sparse. South of Marsa Alam it becomes a more prominent and widespread feature of the coastal landscape. In Egypt, the mangrove is surviving at the very edge of its ecological requirements. The complex web of life that is built around the mangrove, thus maintains a rather precarious existence that is very susceptible to environmental deterioration. Mammals: A small number of Dorcas Gazelle (LR) inhabits the desert wadis and plains. Rüppell's Sand Fox (DD) is fairly common. Nubian Ibex (EN) is a prominent species, which can be found in the mountainous areas.

■ SIGNIFICANT CONSERVATION ISSUES

With the increased numbers of visitors and touristic developpments in the vicinity, it is expected that there will be a growing level of disturbance to birds and other wildlife in their breeding and feeding grounds (particularly those animals which need isolated and secure conditions, such as birds of prey). Cars and their tracks render large areas of wadi beds devoid of vegetation and break up the soil surface, reducing (often quite severely) the available feeding and nesting habitats for many bird species. The problem has become especially acute in recent years, with the increase in the number of desert safari tours using 4x4 vehicles.

23 Gebel Elba

Location: 22° 00'-23° 30'N 36° 00'-36°40'E
Size: c. 5,000 km²
Governorate: Red Sea
IBA criteria: A3



■ PROTECTION STATUS

Protected. Part of the Elba National Park, declared by Prime Ministerial Decree 450/1986, adjusted by Prime Ministerial Decree 1186/1986 and Prime Ministerial Decree 642/1995. The total area of the Elba National Park is 35,600 km².

■ DESCRIPTION

The Gebel Elba area encompasses a cluster of coastal mountains overlooking the Red Sea, immediately to the north of the political borders with Sudan. Most prominent are Gebel Elba (1,435 m), Gebel Shellal (1,409 m), Gebel Shendib (1,911 m) and Gebel Shendodai (1,526 m). These are the southernmost of the Egypt's Red Sea mountains. A 25 km wide coastal plain separates the mountains from the Red Sea coast to the north and east. To the west lie the bleak sand plains and hills of the Eastern Desert. A network of numerous small, deeply cut wadis drain the mountains into several major wadis, which flow towards the Red Sea or the Nile Valley. The most important of these are Wadi Akwamtra, Wadi Aideib and Wadi Serimtai.

Gebel Elba itself enjoys higher precipitation than any of the other mountains in the region, even the higher ones, primarily because of its closeness

to the sea and its favourable position in the face of moisture-laden north easterly winds (Goodman 1985). Average annual rainfall in the region is less than 50 mm, although orographic precipitation on Gebel Elba itself amounts to as much as 400 mm (Goodman & Meininger 1989). The summit of Gebel Elba is a "mist oasis" where a considerable part of the precipitation is contributed in the form of dew or mist and clouds, which often shroud the mountaintop. Aridity increases notably from the north-east to the south-west.

The relative abundance of moisture, which is some of the highest in Egypt, allows a diverse flora to exist. Some 458 species of plants are known from Gebel Elba (Kassas & Zahran 1971). Ferns, mosses and succulents are fairly common in the mist zone at higher altitudes, where *Acacia etbaica*, *Moringa peregrina* and *Dracaena ombet* are dominant. At lower altitudes, in mountain wadis and foothills, there is dense parkland, dominated by *Acacia tortilis*, *Delonix elata*, *Aerva persica* and *Euphorbia cuneata*. The density of this vegetation is particularly high in the northern and north-east regions of Gebel Elba. This middle altitude zone has the greatest biotic diversity. The undulating coastal plain is

interspersed with shallow wadis and covered with scattered bushes and trees dominated by *Acacia tortilis*, *A. nubica* and *Balanites aegyptiaca* (Goodman 1985, Goodman & Meininger 1989). Saltmarsh vegetation and mangroves fringe long stretches of the coast.

■ IMPORTANCE FOR BIRDS

Because of the abundance of moisture, altitudinal effects and geographic position, Gebel Elba supports a rich biodiversity unparalleled in any other, similar, desert habitat in Egypt. Many Afrotropical elements have their northern limits at Elba, including several avian species.

Some 41 bird species are known or thought to breed in the immediate vicinity of Elba (Goodman 1985, Baha El Din 1997). These include 15, or 71% of Egypt's Saharo-Sindian biome-restricted species. Of these Fulvous Babbler is not represented in any other IBA in Egypt. Bateleur, Namaqua Dove, Rose-grey Dove, Nubian Nightjar, Black-crowned Sparrow-Lark, Shining Sunbird, Red Sea Warbler, Rosy-patched Shrike, Long-billed Pipit, Warbling Silverbill and Sudan Golden Sparrow are Afrotropical species that, in Egypt, are largely confined to Gebel Elba. Other species, such as Ostrich and Lappet-faced Vulture, which have disappeared from most of their former North African / Middle Eastern range, can still be found in the Gebel Elba area, although they have both been greatly reduced in number during the past decade (Baha El Din 1997). The area also holds breeding populations of several birds of prey that are rare, or have sharply declined, throughout the remainder of their range in

Egypt. These are Lammergeyer, Egyptian Vulture, Verreaux's Eagle and Bonelli's Eagle.

A3 SAHARO-SINDIAN BIOME-RESTRICTED SPECIES

Sooty Falcon	Desert Lark
Sand Partridge	Hoopoe Lark
Lichtenstein's Sandgrouse	Pale Crag Martin
Crowned Sandgrouse	Blackstart
Pharaoh Eagle-owl	Trumpeter Finch
Hume's Tawny Owl	Bar-tailed Lark
Fulvous Babbler	Mourning Wheatear
White-crowned Black Wheatear	

■ IMPORTANCE FOR OTHER SPECIES

Flora: *Biscutella elbensis* is endemic to Gebel Elba (Boulos 1995). Several other plant species, rare elsewhere in Egypt, are also found here. Reptiles: 30 reptile species and one toad have been recorded to date, of which four do not extend further north (Baha El Din 1997). The Gebel Elba Snake-eyed Lizard was thought to be endemic but has been found recently in south-west Arabia. Mammals: 23 mammal species are known (Osborne & Helmy 1980, Baha El Din 1997). Rüppell's Sand Fox (DD) is fairly common. If Leopard (EN) still exists, it is very rare. Dorcas Gazelle (LR) and Nubian Ibex (EN) are declining but are still found in small numbers, while Barbary Sheep (VU) is, apparently, still present in very limited numbers.

■ SIGNIFICANT CONSERVATION ISSUES

Hunting is perhaps the most serious threat that birds and other wildlife face in the Gebel Elba region. Hunters, either well-to-do Egyptians, Gulf Arabs or military personnel, tend to shoot vast numbers of animals in an indiscriminate, uncontrolled manner

(Goodman 1985, Baha El Din 1997), which has particularly devastated gazelle populations. Larger bird species are usually the most affected, particularly Ostrich and large birds of prey such as Lappet-faced Vulture.

Increased disturbance by hunters, military personnel and development activities, especially in the coastal zone, is driving wildlife further inland towards more arid and less favourable habitats.

Local Bisharin Bedouins have traditionally produced charcoal made solely of dead *Acacia* trees and branches. According to tribal laws it was forbidden to cut living trees. But in recent years these laws have been increasingly overlooked, because of the growing

demand for charcoal in the Nile Valley, and the growing financial needs of the local people. Today, green trees are often felled to be turned into charcoal (Goodman 1985). This, combined with growing grazing pressure, will undoubtedly work to reduce the vegetation cover and increase the aridity of the region.

The area from Berenice south is currently closed to visitors, except those with permission. Most recently, the area between Marsa Alam and Berenice has been opened to tourists. If large-scale tourism were to take place at Gebel Elba itself, it would be highly detrimental to this relatively untouched wilderness.

24 The Abraq Area

Location: 23° 25'N 34° 48'E
Size: c. 1,000 km²
Governorate: Red Sea
IBA criteria: A3



■ PROTECTION STATUS

Protected. Part of the Elba National Park, declared by Prime Ministerial Decree 450/1986, adjusted by Prime Ministerial Decree 1186/1986 and Prime Ministerial Decree 642/1995.

■ DESCRIPTION

The Abraq area encompasses a complex network of steep sandstone hills and winding sandy wadis, the best known of which are Wadi Naam, Wadi Abraq and Wadi Abu Saafa, which drain eastwards into Wadi Hodein, and thence into the Red Sea. There are

a number of perennial springs in the region, of which Bir Abraq and Bir Abu Saafa are the most famous. The area is part of the extremely arid Nubian (southern) section of the Eastern Desert, and is unique in that it represents an enclave of sandstone located east of the Red Sea, the Nile Valley hydrological divide of the Eastern Desert Mountains (Kassas 1993). The area has moderate plant cover, which is largely confined to wadi beds and dominated by *Acacia tortilis*, *A. raddiana*, *Zilla spinosa* and *Aerva javanica*.

■ IMPORTANCE FOR BIRDS

The springs in the area are important watering stations for large populations of sandgrouse. Both Lichtenstein's Sandgrouse and Crowned Sandgrouse use the water resources of the area extensively. The Abraha area also supports an avifauna that includes a large representation (62%) of Egypt's Saharo-Sindian biome-restricted species. The area probably still holds breeding populations of several declining or rare birds of prey in Egypt. These are Lammergeyer, Egyptian Vulture and Bonelli's Eagle.

A3 SAHARO-SINDIAN BIOME-RESTRICTED SPECIES

Sooty Falcon	Desert Lark
Sand Partridge	Hoopoe Lark
Lichtenstein's Sandgrouse	Pale Crag Martin
Crowned Sandgrouse	Trumpeter Finch
Pharaoh Eagle-owl	Bar-tailed Lark
Hume's Tawny Owl	Mourning Wheatear
White-crowned Black Wheatear	

■ IMPORTANCE FOR OTHER SPECIES

Flora: Some 107 plant species have been recorded (Kassas 1993). Reptiles: No less than 20 reptile species occur, including good populations of the declining Ocellated Dab Lizard. Mammals: Dorcas Gazelle (LR) and Nubian Ibex (EN) are known from the area.

■ SIGNIFICANT CONSERVATION ISSUES

Overgrazing, hunting, disturbance, firewood collection and, particularly, charcoal production, are all activities that are threatening the integrity of the site. However, the area is still fairly inaccessible and thus severe human and development pressures remain relatively small.



SAND PARTRIDGE

25 St. Katherine National Park

Location: 27° 55' -28° 45' N 33° 20' -34° 30' E
Size: 4,350 km²
Governorate: South Sinai
IBA criteria: A3



■ PROTECTION STATUS

National Park, declared by Prime Ministerial Decree 613/1988. It is a proposed World Heritage Site. The EU, in co-operation with the EEAA, has an on-going project to develop the park management and infrastructure.

■ DESCRIPTION

The St. Katherine National Park occupies much of the central part of South Sinai, a mountainous region of Precambrian igneous and metamorphic rock, which includes Egypt's highest peaks; Gebel Katherina (2,641 m, the highest in Egypt), Gebel Um Shomar (2,586 m), Gebel El Thabt (2,439 m), Gebel Musa (2,280 m) and Gebel Serbal (2,070 m). These mountains are intersected by a complex network of deeply cut wadis, draining the mountain massive eastward to the Gulf of Aqaba and westward to the Gulf of Suez. The most important of these are: Wadi Feiran, Wadi Hibran, Wadi Isla, Wadi Nasb and Wadi Zaghra.

Mean annual rainfall is 62 mm, falling mostly in spring and autumn. Precipitation occasionally exceeds 300 mm in areas above 1,600 m, where it falls mostly as snow. In winter, temperatures fall as low as -10°C at higher elevations (Goodman and Meininger 1989). This relatively high precipitation

gives rise to a diversity of plant and animal life making the high altitude mountains of central South Sinai one of the richest terrestrial areas for biodiversity in the country.

This relatively mountainous environment supports a diverse and unique assemblage of flora. About 480 plant species, representing almost 25% of Egypt's total flora are found in this region (Arcotech 1994). These include many Irano-Turanian relicts and some 28 endemic species (Danin 1986). *Artemisia herba-alba* is perhaps the most prominent floral component of the landscape of the St. Katherine area, being the dominant or co-dominant species in almost all plant communities at higher altitudes (Ayyad *et. al.* 1993).

Four primary avian habitat types can be identified in the National Park; mountains, wadis, plains and oases. Mountain habitat includes hilly country and slopes, as well as narrow small wadis, gullies and ravines. These are usually poorly vegetated at lower elevations, although higher up very thin vegetation cover shrouds the mountain slopes and diversity is fairly high. Wadis contain much of the vegetation in the region. However, frequent flash floods render many of the narrow wadis and torrent beds plantless.

Several plains and plateaus are found at high altitude. Elwat El Agramya is one of the largest. Some wadi beds, particularly at lower elevations, are very wide and plain-like. The largest and best-known oasis is Feiran. Many orchards and small areas of cultivation are scattered in wadis, particularly at higher elevations. They form an important part of the region's landscape.

The National Park has many outstanding cultural and religious landmarks. The Monastery of St. Katherine and Mount Sinai (Gebel Musa) are the most famous.

■ IMPORTANCE FOR BIRDS

The resident bird community of St. Katherine National Park includes a significant 76% of Egypt's Saharo-Sindian biome-restricted species. Many of these species are not well represented or are not present at all in any other IBA in Egypt.

The St. Katherine region is an outpost for several species that have larger ranges elsewhere. These are Verreaux's Eagle, Tristram's Grackle, Fan-tailed Raven and, most remarkably, Sinai Rosefinch, which has its main area of distribution in Central Asia. Lammergeyer, Bonelli's Eagle and Golden Eagle probably still breed in very small numbers, although there is no recent evidence of nesting.

A3 SAHARO-SINDIAN BIOME-RESTRICTED SPECIES

Sooty Falcon	Pale Crag Martin
Sand Partridge	Blackstart
Lichtenstein's Sandgrouse	Scrub Warbler
Crowned Sandgrouse	Desert Lark
Hume's Tawny Owl	Hoopoe Lark
Pharaoh Eagle-owl	Trumpeter Finch
Tristram's Grackle	Hooded Wheatear
Mourning Wheatear	
White-crowned Black Wheatear	

■ IMPORTANCE FOR OTHER SPECIES

Flora: Nearly half of the 33 known Sinai endemics are found in the St. Katherine area (Goodman & Meininger 1989, Boulous 1995). Many of these are rare and endangered. Insects: the butterflies *Satyrium jebelia* and *Pseudophilotes sinaicus* are endemic to the region, generally in areas above 1,800 m (Larsen 1990). Reptiles: Sinai Banded Snake and Hoogstraal's Cat Snake are two snakes endemic to South Sinai and the Negev. Mammals: Wolf still occurs in very small numbers. Blanford's Fox (DD) has recently been discovered but is rare. Rüppell's Sand Fox (DD) is fairly common. Leopard (EN) probably became locally extirpated earlier this century, but there are recent indications that a few individuals might still exist. Dorcas Gazelle (LR) has declined sharply and is subject to heavy persecution. Nubian Ibex (EN) is a prominent mammal species, which can still be seen regularly.

■ SIGNIFICANT CONSERVATION ISSUES

At the heart of all problems facing the avifauna and the natural habitats in the St. Katherine area, is the increase in the number of people utilising the area in an unregulated and haphazard manner. In recent years there has been a dramatic increase in the number of tourists and tourist developments along with an associated growth in the local population. This uncontrolled human activity, which has suddenly struck the tranquil mountains of South Sinai, is threatening to destroy the very fragile ecosystem of the area.

The drastic expansion in construction

works in the St. Katherine area has been completely unregulated and very badly planned. Perhaps, one of the most significant problems facing the St. Katherine area is solid waste management and disposal. Solid waste is mostly disposed of haphazardly and "on site". Plastic bags and paper can now regularly be seen attached to vegetation at altitudes of up to 2,500, dispersed by wind action from open dumps. With the increased demand in St. Katherine for water for municipal use, the output of liquid waste has soared in the past few years. Wastewater is disposed of by means of septic tanks, from where the wastewater leaches into the aquifer. At certain localities these tanks have been overburdened and wastewater is being released directly onto the surface of the soil. A sewerage system is under construction, but has not become functional yet. Overgrazing and collecting of firewood are degrading the vegetation cover in the St. Katherine area, reducing the quality and quantity of feeding and nesting habitats of birds and other wildlife in the area.

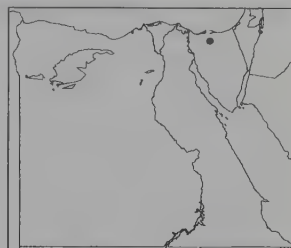
Bird catching is practised on a local and infrequent basis in the St. Katherine area. The main targeted species are Sand Partridge and Chukar Partridge, which are trapped for food.

The numbers involved and impact of this activity on the birds' populations is not known. Bird hunting using air rifles has been reported by Hobbs (1994). Small birds are presumably the main targets. Hobbs (1994) reported as many as 20 Sinai Rosefinch collected by one child in one day. In addition he reports that Bedouins of the Jabaliya tribe consider birds such as Chukar Partridge, Sand Partridge and Tristram's Grackle to be agricultural pests and, as such, persecute them. Larger firearms are readily available to locals, particularly in remote areas (where they are used to protect illegal cannabis plantations) and are, undoubtedly, used to shoot larger birds including birds of prey, as well as other large wildlife. The hunting of fauna, other than birds, could have a negative impact on birds of prey populations. Dab lizards (*Uromastix* sp.), Hares, Hyrax and young Nubian Ibex are all potentially important prey items for larger birds of prey. Their decline or disappearance would directly impact the populations of these birds.

Since 1997 the St. Katherine National Park development project, funded by the EU, has been instrumental in curbing and resolving many of the threats that are endangering the future of this unique region.

26 Gebel Maghara

Location: 30° 37'–30° 53'N 33° 18'–33° 49'E
Size: c. 1,000 km²
Governorate: North Sinai
IBA criteria: A1 & A3



■ PROTECTION STATUS

Not protected. Proposed for protection (Baha El Din 1998).

■ DESCRIPTION

This IBA includes much of Gebel Maghara and the adjoining plains east to Risan Aneiza. Gebel Maghara itself is one of several domes, which characterize north central Sinai. It is the largest Jurassic exposure in Egypt (Zahran & Willis 1992), reaching up to 735 m. Gebel Maghara is dissected by several wadis, the largest of which flows eastwards into a large sand and gravel plain. The North Sinai dune fields, composed of large dunes of aeolian sand, encroach upon the northern part of Maghara and the adjoining plains. The area receives between 50 and 100 mm of rain annually, allowing fairly good vegetation cover of considerable diversity to grow on open plains, as well as in wadis. *Fagonia arabica*, *Anabasis articulata*, *Stipagrostis ciliata* and *Panicum turgidum* dominate the vegetation on the gravel plain (Baha El Din 1990). *Artemisia monosperma* is common and widespread on fine sandy substrates. Substantial stands of *Acacia raddiana* are found in the larger wadis. The flora on the hills of Maghara includes many

Mediterranean relicts, such as *Juniperus phoenicea*, which grows on the north facing slopes (Ayyad *et al.* 1993) and is found nowhere in Egypt outside the hills of north central Sinai.

■ IMPORTANCE FOR BIRDS

Because of its great diversity of land forms and desert habitats the Gebel Maghara area holds a unique combination of avian species, including a large proportion of Egypt's Saharo-Sindian biome-restricted species. At least 14, or 67%, of these species are known or expected to breed in the area. This IBA also has the greatest diversity of breeding larks in the country, seven species in all: Bar-tailed Lark, Desert Lark, Hoopoe Lark, Dunn's Lark, Temminck's Horned Lark, Short-toed Lark and Crested Lark (Baha El Din 1990). The declining Houbara Bustard winters in the region in small numbers and might still breed when conditions permit.

A1 GLOBALLY THREATENED SPECIES

Near Threatened

Pallid Harrier	Winters in small numbers and regular during migration
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A3 SAHARO-SINDIAN BIOME-RESTRICTED SPECIES

Sooty Falcon	Pale Crag Martin
Sand Partridge	Blackstart
Spotted Sandgrouse	Desert Lark
Crowned Sandgrouse	Hoopoe Lark
Scrub Warbler	Bar-tailed Lark
Hooded Wheatear	Trumpeter Finch
Mourning Wheatear	
White-crowned Black Wheatear	

■ IMPORTANCE FOR OTHER SPECIES

Flora: Hadidi et al. (1992) recommended the protection of the Gebel Maghara area on account of its holding many endangered, rare and endemic plants. Reptiles: Good populations of the endemic Savigny's Agama and the declining Egyptian Dab Lizard are still found in the sand and gravel habitats of this region. The Egyptian Tortoise (EN) might still exist in the northern parts of the area. Mammals: small populations of Nubian Ibex (EN) still remain on Gebel Maghara, while Dorcas Gazelle (LR) has, most probably, been locally extirpated. Flower's Gerbil (CR) is probably found in the area.

■ SIGNIFICANT CONSERVATION ISSUES

The North Sinai Agriculture

Development Project, in its third stage, aims at cultivating large areas of the open flat desert of the region south and east of Gebel Maghara, including a large part of the IBA identified herein. Overgrazing and ploughing both have extensive, negative impact on the vegetation of the area. Extensive quarrying for gravel takes place in a haphazard manner completely altering the landscape and destroying habitats in very large areas of the open plain. Disturbance and uncontrolled use of vehicles are contributing to further a deterioration in the natural conditions and habitat quality in the area. Hunting by Gulf Arabs in the area during winter is unregulated. Houbara Bustard is the main quarry.

27 Quseima

Location: 30° 34'–30° 43'N 34° 15'–34° 30'E
Size: c. 200 km²
Governorate: North Sinai
IBA criteria: A3



■ PROTECTION STATUS

Not protected. Proposed for protection (Baha El Din 1998).

■ DESCRIPTION

A region of rolling limestone hills dissected by numerous wadis. The most important of these is Wadi El Gedeirat, a narrow, winding wadi bounded by steep hills. To the north is Gebel El Ain (509 m). A small, perennial creek flows from the spring of Ain El Gedeirat, creating an elongate oasis with dense

swamp vegetation dominated by *Phragmites* and *Tamarix*. Old olive groves and cultivated fields cover most of the wadi bed. Some water from Ain El Gedeirat is piped further down stream to irrigated fields and orchards near the village of Quseima. The surrounding desert is formed of hills interspersed with medium sized gravel plains with good vegetation cover. The flora of the region has, generally, a strong Irano-Turanian influence. *Thymelaea hirsuta* is a

prominent plant in this landscape. The ruins of the ancient fortress of Qadesh Barnea are found in the centre of the wadi. Ain Qadis is a further, smaller spring located some seven kilometres south east of Ain El Gedeirat. This spring flows only a short distance into the desert and lacks the vegetation cover that Ain El Gedeirat supports.

■ IMPORTANCE FOR BIRDS

This unique area holds a diverse avian community including 13, or 62% of Egypt's Saharo-Sindian biome-restricted species. Ain El Gedeirat and Ain Qadis are two very important drinking water sources for three sandgrouse species: Spotted Sandgrouse, Crowned Sandgrouse and Black-bellied Sandgrouse. Pin-tailed Sandgrouse is also known from the area but in smaller numbers. Several hundred of these birds come from a vast area of desert, including the western Negev, to drink at the springs, although the latter two species generally visit the area only during autumn and winter. This is also the only known site in Egypt where Golden Eagle regularly breeds.

In addition, the area falls along one of the most important flyways for soaring birds, particularly birds of prey. Although the migration here is on a rather broad front, large numbers are regularly seen over Wadi El Gedeirat during the spring and autumn

migrations. Many birds are attracted to the water and vegetation and descend to drink and roost.

■ IMPORTANCE FOR OTHER SPECIES

Flora: Many Irano-Turanian floral elements, of limited distribution in Egypt, are found here. Crustacea: the perennial creek in Wadi El Gedeirat is the only known locality in which the fresh water crab *Potamon potamios palaestinisensis* is found in Egypt. Reptiles: The rare Innes' Cobra is known from the area. Mammals: Small populations of Porcupine, Nubian Ibex (EN) and Striped Hyena still remain in the adjacent hills.

■ SIGNIFICANT CONSERVATION ISSUES

Hunting takes place on a regular basis. Target species are largely Sandgrouse sp. and Chukar Partridge, but other species are also taken. The population of the latter species has sharply declined in recent years (it is also regarded as an agricultural pest in the region). Nests of Golden Eagle have been raided regularly, and the few local pairs might have ceased nesting. Falcon catching is prevalent throughout the region, as is the case in most parts of North Sinai in autumn (Baha El Din & Salama 1991). Many 'non target' birds of prey fall victim to this practice. Overgrazing has degraded much of the desert habitats in the vicinity.

A3 SAHARO-SINDIAN BIOME-RESTRICTED SPECIES

Sand Partridge	Blackstart
Spotted Sandgrouse	Desert Lark
Crowned Sandgrouse	Bar-tailed Lark
Scrub Warbler	Hoopoe Lark
Trumpeter Finch	Pale Crag Martin
Hooded Wheatear	Mourning Wheatear
White-crowned Black Wheatear	

28 Wadi Gerafi

Location: 29° 35' -30° 15'N 34° 30' -34° 50'E
Size: c. 1,000 km²
Governorate: North Sinai
IBA criteria: A3



■ PROTECTION STATUS

Not protected. Proposed for protection (Baha El Din 1998).

■ DESCRIPTION

An extensive wadi system in eastern central Sinai. The wadi's catchment area extends from the El Tih Plateau in the south and the Israeli border in the east, to a ridge of hills in the north and west that separate this watershed from that of Wadi El Arish. The wadi and its numerous tributaries cut through slightly undulating gravel plains and low-lying limestone country with scattered hills. The main tributaries that flow into Wadi Gerafi include Wadi Tamarani and Wadi El Beida. This wadi system flows northeast, eventually reaching Wadi Araba in the Negev. Vegetation is largely restricted to runnels, depressions and wadis although wide torrent beds are largely devoid of vegetation. A fairly dense growth of large *Acacia gerrardii* lines the trunk of the main wadi and its major tributaries, forming open parkland. *Lygos raetam* forms dense, bushy cover along the fringes of wadis and in depressions. Other dominant flora includes: *Hammada elegans*, *Panicum turgidum* and *Fagonia* sp. Bedouins, who have scattered settlements and cultivation along the wadi system, sparsely inhabit the area.

■ IMPORTANCE FOR BIRDS

Wadi Gerafi and its tributaries have 17, or 81% of Egypt's Saharo-Sindian biome-restricted species; the highest number contained in any IBA in the country. This reflects the exceptional diversity of habitat and landscape features, and the location of the area at the meeting point of the distributional boundaries of several avian species. The area is one of the very few remaining locations in Egypt where Macqueen's Houbara Bustard (*Chlamydotis undulata macqueenii*) breeds occasionally and still winters regularly in moderate numbers (Waheed Salama pers. com.). In addition, the region falls within a major migratory route for soaring birds, which pass through on a rather broad front. Many of these birds roost in the area.

A3 SAHARO-SINDIAN BIOME-RESTRICTED SPECIES

Sooty Falcon	Blackstart
Sand Partridge	Arabian Babbler
Crowned Sandgrouse	Scrub Warbler
Spotted Sandgrouse	Trumpeter Finch
Hume's Tawny Owl	Bar-tailed Lark
Pharaoh Eagle-owl	Desert Lark
Yellow-vented Bulbul	Hoopoe Lark
Pale Crag Martin	Hooded Wheatear
Mourning Wheatear	
White-crowned Black Wheatear	

■ IMPORTANCE FOR OTHER SPECIES

Flora: *Acacia gerrardii* is restricted, in Egypt, to this region, Hadidi et.al. (1992) recommend the conservation of the

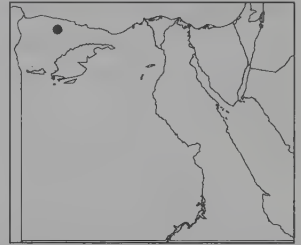
area. Reptiles: Sinai Banded Snake and Hoogstraal's Cat Snake are two snakes that are endemic to South Sinai and the Negev. The former was found in one of the southern tributaries of Wadi Gerafi, while the latter, almost certainly, occurs in the area. Mammals: Wolf probably inhabits the area in very small numbers. Rüppell's Sand Fox (DD) is uncommon. Dorcas Gazelle (LR) is still found in small numbers, but is declining as a result of excessive hunting.

■ SIGNIFICANT CONSERVATION ISSUES

Large livestock populations are continually overgrazing the vegetation of the area and disturbing large parts of it. Gulf Arab hunters have targeted this region in pursuit of their preferred quarry, Houbara Bustard. These hunters also decimate other wildlife, especially gazelles, not to mention the extensive damage they do to vegetation and the important desert topsoil with their off-road vehicles.

29 El Qasr Desert

Location: 30° 45' -31° 25'N 26° 00' -27° 10'E
Size: c. 7,500 km²
Governorate: Matruh
IBA criteria: A3



■ PROTECTION STATUS

Not protected. Proposed for protection (Baha El Din 1998).

■ DESCRIPTION

Part of El Diffa Miocene Plateau. A vast, flat, sand and gravel plain with scattered clay pans. Several low limestone ridges run east - west across the plain and gradually raising the flat landscape to an elevation of 200 m. Fairly dense desert scrub is dominated in the northern part by *Thymelaea hirsuta* and in the south by *Anabasis articulata* and *Hamada scoparia*, with scattered *Lycium* sp. bushes. Annual rainfall is fairly high, averaging about 140 mm near the coast. Rainfall and density of vegetation decrease rapidly southwards, and severe desert

conditions prevail beyond 70 km from the coastline.

The area represents a fairly undisturbed example of a unique and restricted habitat in Egypt, the Mediterranean coastal steppe. A habitat that is being lost and degraded very rapidly.

■ IMPORTANCE FOR BIRDS

The area falls on the boundary between the Mediterranean and Saharo-Sindian Biomes; thus, it supports species restricted to both biomes. It is the only IBA in Egypt selected on the basis of the occurrence of Mediterranean biome-restricted species. Four species representing 100% of Egypt's Mediterranean biome-restricted species are found in this

IBA. On the other hand, the four Saharo-Sindian biome-restricted species found in the area represent only 19% of Egypt's assemblage of these species.

Ornithologically, this is one of the least known regions of Egypt. In the past few years Thick-billed Lark was found breeding in the area for the first time in Egypt. Very large and previously unrecorded breeding populations of Lesser Short-toed Lark were discovered. A small, hitherto unknown, breeding population of Mourning Wheatear (apparently of the race *halophila*) was also discovered (Baha El Din pers. obs.). Other species known from the area include: Cream-colored Courser, Desert Wheatear, Crested Lark and Brown-necked Raven. Thick-billed Lark, Dupont's Lark and Red-rumped Wheatear do not occur in any other Egyptian IBA. A flock of about 150 Dotterel was seen in the area in spring 1994, indicating that potentially large numbers of this species might winter in the region. The area held good numbers of the North African race of Houbara Bustard (*Chlamydotis undulata undulata*) until recently, but the local population has been decimated by Arab hunters. The species still occurs but breeding is localised and rare.

A3 MEDITERRANEAN BIOME-RESTRICTED SPECIES

Thick-billed Lark	Temminck's Horned Lark
Dupont's Lark	Red-rumped Wheatear

■ IMPORTANCE FOR OTHER SPECIES

In general terms, this IBA falls in one of Egypt's regions that is richest in biodiversity. Flora: The area holds one of Egypt's highest plant diversities. Reptiles: small numbers of Egyptian Tortoise (EN) may still exist in the region. Mammals: Four-toed Jerboa (EN), Greater Jerboa (LR) and Dormouse (LR) are present in the more densely vegetated coastal region. Dorcas Gazelle (LR) used to be common in this region, but has declined sharply as a result of excessive hunting.

■ SIGNIFICANT CONSERVATION ISSUES

The whole coastal desert of the Mediterranean, west of Alexandria, is severely overgrazed, and is subjected to intensive rain-based cultivation and development pressures. Large areas of desert are ploughed and cleared of their vegetation cover in order to grow winter cereals. After the crop is harvested in spring or early summer, the desert is left barren, devoid of any cover. Overgrazing further compounds the problem by degrading remaining patches of natural vegetation.

Hunting and falconry, mostly by Gulf Arabs, has had a profound impact on all wildlife in the region. Gazelles and Houbara Bustard have been the worst affected, as they are the main quarries for these hunters. Off-road vehicle use by hunters, the military and Bedouins, is contributing in a major way to the degradation of natural habitats in this region.

30 Suez

Location: 29° 58'N 32° 33'E
Size: c. 50 km²
Governorate: Suez
IBA criteria: A1 & A4iv



■ PROTECTION STATUS

Not protected.

■ DESCRIPTION

The city of Suez is located at the head of the Gulf of Suez the northernmost point of the Red Sea. It overlooks the southern entrance to the Suez Canal and the Bay of Suez to the east and south-east. To the south-west a wide plain separates the city from Gebel Ataqa (871 m) and the Isthmic Desert plains lie to the north-east. A freshwater canal and a narrow band of cultivated land extend along the western bank of the Suez Canal and reach the northern suburbs of the city. The Bay of Suez once had some of the largest and richest intertidal mud flats in the Egyptian Red Sea; today, only small fragments remain. Suez has a busy port and a growing number of industries consisting, primarily, of petrochemical and fertiliser factories. The human population of Suez numbers around 250,000.

■ IMPORTANCE FOR BIRDS

Because of its unique position on the only land bridge between Eurasia and Africa the Isthmus of Suez is one of the most important bottlenecks in the world for migrating soaring birds, particularly birds of prey. Maxima of 134,000 and 125,000 birds of prey, were

counted in autumn 1981 (Bijlsma 1983) and spring 1982 (Wimpfheimer *et al.* 1983) respectively. The commonest birds of prey recorded on passage at Suez are Steppe Eagle, Steppe Buzzard, Lesser Spotted Eagle and Short-toed Eagle. White Stork, Black Stork, White Pelican and Common Crane also occur regularly in large numbers on migration. Although most soaring birds pass over Suez at fairly high altitudes without stopping, occasionally, large numbers roost in the vicinity of the city or land to drink and feed en route, particularly during the hotter parts of the migration seasons. This can expose large numbers of some species to serious dangers. Suez also falls on an important migratory flyway for many waterbirds, and is still of importance for some wintering waders, which utilise the mudflats of the Bay of Suez.

A1 GLOBALLY THREATENED SPECIES

Vulnerable

Imperial Eagle	Regular migrant
Greater Spotted Eagle	Uncommon migrant
Lesser Kestrel	Uncommon migrant
White-eyed Gull	Uncommon non-breeding visitor year round

Near Threatened

Pallid Harrier	Uncommon migrant
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A4iv BOTTLENECK WHERE > 20,000 MIGRANTS

REGULARLY PASS DURING MIGRATION

Well over 100,000 soaring birds pass through on migration every autumn and spring

■ SIGNIFICANT CONSERVATION ISSUES

Many of the activities and structures present in the bustling industrial city of Suez pose a real and serious threat to the hundreds of thousands of birds that pass over, or through, the region. For this reason special attention should be given to future developments in the Suez region and to evaluating their potential impact on migrating birds in this, one of the world's most important migratory bottlenecks.

Suez suffers from severe pollution problems, perhaps the most serious is oil pollution, a chronic problem in the Bay of Suez originating from both onshore and offshore sources. Other water pollution problems include improper dumping of chemical waste (from petrochemical and fertiliser factories) and pesticides into exposed canals. Because, invariably, thousands of migrating birds descend to rest and drink at Suez, water borne pollution will, potentially, affect vast numbers of waterbirds, as well as birds of prey. Sick, oiled and dying birds of prey are not unusual sights at Suez during the migration seasons.

The newly established sewage treatment facility at Suez provides an illustrative example of how even small design oversights could pose a huge

risk to migrating birds. Because sludge-drying lagoons in the new facility were built with vertical (not sloping) sides, birds attempting to drink from the lagoons fall into the sludge and drown. It is estimated that hundreds of birds of prey succumb to this trap every year.

Much of the natural habitat in the vicinity of the city has vanished in recent years. Over 50% of the mudflats in the Bay of Suez have been filled and reclaimed for the purpose of urban expansion. Reed swamps, formerly found to the north of the city, have been drained and built on. Although hunting is not widespread, the potential damage done by a single hunter could be enormous.

High-tension power lines are numerous in the Suez region and pose a very serious threat to flying birds. An exceptionally hazardous power line was erected in 1998, suspended about 250 m over the Suez Canal some 15 km north of Suez. This power line stands immediately in the flight path of the majority of soaring migrants concentrated at Suez, and could have a devastating impact on these birds, especially during unusual weather conditions, such as sand storms, which occur in the spring.

31 Gebel El Zeit

Location: 27° 40' -28° 02' N 33° 25' -33° 35' E
Size: c. 1,000 km²
Governorate: Red Sea
IBA criteria: A1 & A4iv



■ PROTECTION STATUS

Not protected. Sabkhet Ras Shukheir is proposed for protection (Baha El Din 1998).

■ DESCRIPTION

This IBA is composed of a narrow, 100 km long strip extending along the Gulf of Suez / Red Sea coast from Ras Gharib in the north to the bay of Ghubbet El Gemsa in the south. Gebel El Zeit itself is an isolated, elongate mountain that reaches up to 457 m and overlooks the southern end of the Gulf of Suez. The eastern flank of the mountain falls steeply to the sea, while the western flank slopes more gently and merges with a 20 km wide plain that separates Gebel El Zeit from the rest of the Red Sea hills further west. To the north there is a wide coastal plain fringed near the shore by several areas of sabkha, the largest of which is Sabkhet Ras Shukheir. This contains several pools of hyper-saline water and large patches of saltmarsh. To the south are Ghubbet El Zeit and Ghubbet El Gemsa, two large shallow bays with extensive intertidal mud and sand flats. Numerous small wadis drain the mountains of the area and dissect adjacent plains. These are lined with scattered *Acacia* trees.

■ IMPORTANCE FOR BIRDS

The Gebel El Zeit area is a very important migration corridor for soaring migrants, particularly birds of prey and storks. Because of the geography of the Gulf of Suez as a whole and the micro-geographic configuration of the Gebel El Zeit area, which is the narrowest point in the southern part of the Gulf of Suez, vast numbers of migrant soaring birds are funnelled through this stretch of coast on both spring and autumn journeys. Birds of prey, storks and pelicans migrate through and usually land, rest or roost near the coastline and on the surrounding desert plains and hills. Resting and roosting storks especially, utilise the two bays of Ghubbet El Zeit and Ghubbet El Gemsa and the saltmarsh at Sabkhet Ras Shukheir.

Gebel El Zeit itself serves as a stepping stone for birds that make the crossing between the western coast of the Gulf of Suez and south Sinai in spring. Many of the birds observed at Elat, and further north in Israel, most probably pass through this area. Grieve (1996 & in lit.) counted about 16,000 birds of prey belonging to 18 species and 20,000 White Stork in two weeks of observations spread over three spring seasons. The most

numerous birds of prey are Steppe Eagle, Steppe Buzzard, Honey Buzzard and Levant Sparrowhawk.

In autumn the area is especially critical as many birds, after crossing the Gulf of Suez, arrive tired, flying at low altitudes and often land in large numbers. Almost all of the vast numbers of White Stork that migrate over South Sinai in the autumn (most of the world population) pass through the Gebel El Zeit area. A one-day count on 7 September 1998 produced a total of 56,000 White Stork (Ornis Consult in lit.). Goodman & Meininger (1989) report up to 100,000 birds crossing the Gulf of Suez in this region in a single day. Black Stork, White Pelican and many species of birds of prey also pass through the area in huge numbers.

Moderate numbers of waterfowl utilise Ghubbet El Zeit and Ghubbet El Gamsa, particularly during migration. Some of the large flocks of ducks seen migrating far offshore, during spring and autumn, rest on the sheltered waters of these bays. Also large numbers of seabirds from breeding colonies on neighbouring islands feed regularly in the sea off Gebel Zeit.

A1 GLOBALLY THREATENED SPECIES

Vulnerable

Imperial Eagle	Regular migrant
Lesser Kestrel	Uncommon migrant
White-eyed Gull	Common non-breeding visitor year round

Near Threatened

Pallid Harrier	Uncommon migrant
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A4iv BOTTLENECK WHERE > 20,000 MIGRANTS

REGULARLY PASS DURING MIGRATION

Hundreds of thousands of White Stork and other soaring birds pass through the area on migration every autumn and spring.

■ IMPORTANCE FOR OTHER SPECIES

Marine: There are seven species of sea grass in the bay of Ghubbet El Zeit forming one of the most diverse and extensive sea grass beds in the northern Red Sea. These beds are potential feeding grounds for Dugong (VU) and endangered marine turtles.

■ SIGNIFICANT CONSERVATION ISSUES

Oil pollution from onshore and offshore oil facilities, as well as from passing vessels is one of the most serious threats to birds in this area. The uncoordinated tourist developments spreading north from Hurghada are rapidly consuming all natural habitats and are threatening to completely alter the landscape of the region in the near future. Associated pollution and man made obstacles (such as power lines, windmills, airports etc.), could pose unforeseen threats to vast numbers of migrant birds. Development in this region should be carried out with very careful consideration of migratory bird requirements.

Falcon catching is an illegal activity that has expanded in recent years in Egypt, especially along the coast of Gulf of Suez and the rest of the Red Sea. This activity is carried out in the autumn.

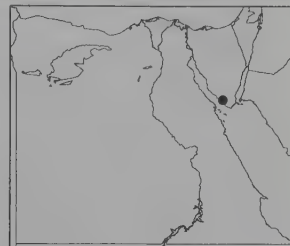
32 El Qa Plain

Location: 27° 47'N-28° 40'N

Size: 2,000 km²

Governorate: South Sinai

IBA criteria: A1 & A4iv



■ PROTECTION STATUS

Not protected.

■ DESCRIPTION

A wide plain that flanks the South Sinai mountain massif on the west and separates it from the Gulf of Suez. It is elongate with a north-west to south-east axis, being more than 100 km long and 20 km wide. The IBA is mostly concerned with the coastal portion of the plain and extends from Wadi Feiran in the north to Ras Mohammed in the south, where migratory birds tend to concentrate and often land in vast numbers. The plain is dissected by many wadis that flow from the mountains of Sinai into the Gulf of Suez. To the north of El Tor a narrow mountain range separates the plain from the Gulf of Suez. This mountain, immediately overlooking the gulf, is thought to be a very important jumping-off point from which many soaring birds attempt to make the passage across the Gulf of Suez in autumn. Sparse scrub vegetation and scattered *Acacia raddiana* trees cover sizeable sections of the plain. The town of El Tor is located within the area of concern and is the only major human settlement in the region.

■ IMPORTANCE FOR BIRDS

This IBA has a similar role and importance to migratory soaring birds as that of Gebel El Zeit. The area is a major corridor for migratory soaring birds in both autumn and spring. Celmins & Baha El Din (in prep.) note that almost 70% of the White Storks counted at Ras Mohammed in autumn 1998 (see below) potentially make the crossing over the Gulf of Suez further north towards the town of El Tor. In a study of bird migration across the Middle East, all White Stork, monitored by means of satellite transmitters, were observed to make the critical crossing of the Gulf of Suez over the El Qa Plain (van den Bossche pers. com.). The area probably holds one of the largest remaining breeding populations of Macqueen's Houbara Bustard (*Chlamydotis undulata macqueniei*) in Egypt.

A1 GLOBALLY THREATENED SPECIES

<i>Vulnerable</i>	
Imperial Eagle	Regular migrant
Lesser Kestrel	Uncommon migrant
<i>Near Threatened</i>	
Pallid Harrier	Uncommon migrant

A4iv BOTTLENECK WHERE > 20,000 MIGRANTS REGULARLY PASS DURING MIGRATION

Hundreds of thousands of White Stork and other soaring birds pass through the area on migration every autumn and spring.

■ IMPORTANCE FOR OTHER SPECIES

Mammals: Dorcas Gazelle (LR) is present in small numbers, probably representing the largest remaining population in Sinai.

■ SIGNIFICANT CONSERVATION ISSUES

Development, especially for tourism, is planned for the coastline along the

El Qa plain and could cause disturbance and pose a threat to migrating birds. Of most concern is the construction of powerlines near the coast, which could lead to avian collisions, especially in the spring when birds tend to fly at low altitudes as they come ashore after crossing the Gulf of Suez.

33 Ras Mohammed National Park

Location: 27° 44'N 34° 15'E

Size: 480 km²

Governorate: South Sinai

IBA criteria: A1 & A4iv



■ PROTECTION STATUS

Protected. Declared by Prime Ministerial Decree 1068/1983, adjusted by Prime Ministerial Decree 2035/1996. This is Egypt's oldest protected area. Since 1989, the EEAA, with support from the EU, has been developing the park management and infrastructure making it the country's most famous and best managed protectorate.

■ DESCRIPTION

Ras Mohammed is a headland at the southern most tip of the Sinai Peninsula, overlooking the juncture of the Gulfs of Suez and Aqaba. It is composed of uplifted coral reefs, which in places rise steeply from the sea forming high cliffs. These are interspersed with sandy bays and some intertidal flats. A mangrove stand of *Avicennia marina* is found at the southern end of Ras Mohammed. Coral reefs fringe the headland in almost all directions.

Although Ras Mohammed is primarily a marine park, its boundaries encompass a considerable diversity of desert habitats, which includes sandstone mountains, gravel plains, wadis, and sand dunes.

■ IMPORTANCE FOR BIRDS

Ras Mohammed's primary importance is as a bottleneck for migratory soaring birds, which concentrate in the area in large numbers and regularly stop to rest. White Stork is the most numerous and prominent soaring bird occurring at Ras Mohammed. In autumn, birds of this species tend to concentrate in southern Sinai, where huge flocks build up at Ras Mohammed. Celmins (1998) counted a total of 275,743 individuals on 27 days in August and September 1998, but estimated the actual number of birds passing through to be between 390-470,000. Many of the birds congregating in the

area descend to rest on the sandy beaches, particularly on the western side of the peninsula overlooking the Gulf of Suez. Smaller numbers also rest on higher ground in the surrounding desert. Clemins (1998) estimates a daily average of 12,000 birds resting at Ras Mohammed during peak autumn migration. After resting for some hours, the birds attempt to make the crossing to the western side of the Gulf of Suez. However, it appears that most of the birds seen at Ras Mohamed cross the gulf further north along the El Qa Plain (Celmins & Baha El Din in prep.). Other prominent migrants concentrating at Ras Mohammed regularly include: White Pelican, Black Stork, Black Kite, Steppe Buzzard and Levant Sparrowhawk. Spring migration is much less pronounced and no significant concentrations have been noted.

Prominent breeding species

include: Reef Heron, Sooty Falcon, Osprey and Kentish Plover.

A1 GLOBALLY THREATENED SPECIES

Vulnerable

Imperial Eagle
Lesser Kestrel
White-eyed Gull

Regular migrant
Uncommon Migrant
Uncommon non-breeding
visitor year round

Near Threatened

Pallid Harrier

Uncommon migrant

A4iv BOTTLENECK WHERE > 20,000 MIGRANTS

REGULARLY PASS DURING MIGRATION

390-470,000 White Stork have been estimated to pass through in the autumn.

■ IMPORTANCE FOR OTHER SPECIES

Marine life: Ras Mohammed is primarily important for its marine life and unique coral reefs that are considered to be some of the most spectacular in the world. Reptiles: both Green Turtle (EN) and Hawksbill Turtle (CR) regularly occur off Ras Mohammed and the latter breeds locally.



WHITE STORK AND HONEY BUZZARD

34 Ain Sukhna

Location: 29° 35'N 32° 20'E
Size: 150 km²
Governorate: Suez
IBA criteria: A1, A3 & A4iv



■ PROTECTION STATUS

Not protected.

■ DESCRIPTION

Ain Sukhna is a warm, brackish spring located about 50 km south of Suez at the north-eastern foot of Gebel El Galala El Bahariya overlooking the Gulf of Suez. The name, however, has traditionally been used in reference to a much larger region. Roughly encompassing the wide coastal plain wedged between Gebel Ataka in the north and Gebel El Galala El Bahariya in the south, and including the coastal portion of the latter mountain range. In the immediate vicinity of the spring there is a dense growth of saltmarsh vegetation composed primarily of *Juncus rigidus*, *Tamarix nilotica* and *Nitraria retusa*. To the north and west there is a large sand and gravel plain intersected by several large, shallow wadis, with good vegetation cover dominated by *Hammada elegans*, *Zilla spinosa*, with numerous, scattered *Acacia raddiana*, *Tamarix nilotica* and *Calotropis procera* (Zahran & Willis 1992). Gebel El Galala El Bahariya, which rises abruptly from the shallow waters of the Gulf of Suez reaching up to 1,274 m. Several small springs and oases are found in the deep wadis that drain the steep coastal (eastern) flanks

of the mountain, these largely support saltmarsh vegetation.

■ IMPORTANCE FOR BIRDS

Ain Sukhna is situated along a major flyway for Palearctic migrant birds. Large birds of prey (passive flyers) concentrate in significant numbers, particularly in spring. Most prominent of these are: Black Kite, Steppe Buzzard, Steppe Eagle, Lesser Spotted Eagle, Booted Eagle and Egyptian Vulture. Although no systematic counts have been carried out at Ain Sukhna, numerous single-day counts indicate that well over 100,000 large birds of prey and storks may pass through the area every year. Most birds congregate on the north-eastern ridges of Gebel El Galala El Bahariya to gain altitude before gliding north across flat country. Many birds are attracted to the springs of Ain Sukhna, particularly during the hotter part of the migration season, and fairly large numbers descend to drink and roost in the vicinity. A significant passage of Common Crane is also known from the area. These birds regularly roost in large numbers on the wide coastal plain.

The desert habitats of the area support a good diversity of characteristic Saharo-Sindian species. Small numbers of White-eyed Gull are regularly seen

offshore in the Gulf of Suez, particularly in winter. Other prominent water-birds include: Slender-billed Gull, Lesser Black-backed Gull, Armenian Gull and Yellow-legged Gull, all of which are migrants or winter visitors.

A1 GLOBALLY THREATENED SPECIES

Vulnerable

Imperial Eagle	Regular migrant
Greater Spotted Eagle	Uncommon migrant
Lesser Kestrel	Uncommon migrant
White-eyed Gull	Regular visitor >100 seen in winter

Near Threatened

Pallid Harrier	Uncommon migrant
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A3 SAHARO-SINDIAN BIOME-RESTRICTED SPECIES

Sand Partridge	Pale Crag Martin
Spotted Sandgrouse	Bar-tailed Lark
Pharaoh Eagle-owl	Desert Lark
Trumpeter Finch	Hoopoe Lark
Mourning Wheatear	Scrub Warbler
Hooded Wheatear	
White-crowned Black Wheatear	

A4iv BOTTLENECK WHERE > 20,000 MIGRANTS

REGULARLY PASS DURING MIGRATION

Over 5,000 White Stork and 5,000 Common Crane have been recorded on migration. At least 100,000 birds of prey pass through every year.

been erected in the area for some time. Their impact on birds is not well known, but does not appear to be a threat (Baha El Din 1996). A large cement factory located some 30 km to the north west of Ain Sukhna has been active for a number of years now and spews out tons of dust every day, killing all desert vegetation within a radius of 15 km around the facility. During north-westerly winds (the prevailing wind in the region) visibility at Ain Sukhna deteriorates drastically. The impact of this on the migration of soaring birds is not known. Fast growing tourist developments, overgrazing, misuse of off-road vehicles, land reclamation, unregulated quarrying and solid waste dumping are all causing rapid degradation of the natural habitats of the region.

In 1998 a massive development project was launched at Ain Sukhna to establish a shipping port, an airport and a heavy industry zone. Infrastructure work has already started. This project could jeopardise migratory birds concentrating in this area, if special attention is not paid to ensure that no developments harmful to birds and other wildlife are established. The airport component would pose an exceptionally high risk to both birds and aircraft operating in the airspace over the region. Careful impact assessment of all development activity in this region is a top priority.

■ SIGNIFICANT CONSERVATION ISSUES

Oil pollution is perhaps the most serious threat to migrating birds in this area. The Ain Sukhna oil terminal (an off-loading and storage facility located in the heart of this IBA), often causes minor spills in the Gulf of Suez. Oil from the storage facility has also been released onshore on several occasions and has contaminated fresh water pools where birds of prey and other species regularly come to drink and bathe. High tension power lines have

APPENDIX A: GLOSSARY

Ain = Spring
 Bughaz = Inlet on sea or lake shore
 Feddan= 0.42 Hectare
 Gebel = Mountain
 Khor = Winding narrow inlet
 Sabkha = Salt flats
 Serir = Flat pebble or gravel desert
 Seif = Longitudinal dune
 Wadi = Dry river course

APPENDIX B: GAZETTEER

Main geographic locations in Egypt and those mentioned in the text.

Location	N.	Lat.	E.	Long.
Abu Minqar	26°	30'	27°	38'
Abu Minqar Island	27°	13'	33°	52'
Abu Rimathi Island	27°	10'	33°	59'
Abu Simbel	22°	22'	31°	38'
Ain / Wadi El Gedeirat	30°	39'	34°	26'
Ain Qadis	30°	35'	34°	29'
Ain Sukhna	29°	35'	32°	20'
Alexandria	31°	12'	29°	54'
Ashrafi Island	27°	47'	33°	41'
Aswan	24°	05'	32°	53'
Bahariya Oasis (approx.)	28°	21'	28°	52'
Bahig	30°	56'	29°	35'
Baltim	31°	33'	31°	05'
Bay of Suez	29°	50'	32°	30'
Berenice	23°	58'	35°	22'
Bir / Wadi Abraaq	23°	25'	34°	48'
Bir / Wadi Abu Saafa	23°	12'	34°	49'
Bir Beida	26°	05'	34°	07'
Bir El Thimada	30°	10'	33°	28'
Bir Kansisrob	22°	15'	36°	22'
Bir Mallaha	27°	34'	33°	27'
Bir Misaha	22°	12'	27°	57'
Bir Shellal	31°	17'	34°	29'
Bir Taba	29°	30'	34°	53'

Bir Tarfawi	22°	55'	28°	53'
Bitter Lakes (approx.)	30°	25'	32°	25'
Burg El Arab	30°	55'	29°	32'
Cairo	30°	03'	31°	15'
Dakhla Oasis (approx.)	25°	29'	28°	59'
Damietta	31°	25'	31°	48'
Dunqul	23°	26'	31°	37'
Eilat	29°	33'	34°	57'
El Alamein	30°	49'	28°	57'
El Arish	31°	09'	33°	48'
El Hammam	30°	50'	29°	23'
El Hamra Island	27°	34'	33°	46'
El Kuntilla	30°	00'	34°	41'
El Malaha.	31°	13'	32°	19'
El Manzala	31°	09'	31°	54'
El Omayed	30°	45'	29°	12'
El Qa Plain (approx.)	28°	10'	33°	40'
El Tor	28°	14'	33°	37'
El Tih Plateau (approx.)	29°	40'	34°	10'
Fanadir Islets	27°	18'	33°	49'
Farafra Oasis (approx.)	27°	00'	28°	00'
Fariskur	33°	20'	31°	43'
Fayoum (approx.)	31°	25'	30°	47'
Gebel Abraq	23°	23'	34°	45'
Gebel Ataqa	29°	55'	32°	20'
Gebel El Ain	30°	45'	34°	26'
Gebel El Galala El Bahariya (approx.)	29°	20'	32°	00'
Gebel El Thabt	28°	16'	34°	01'
Gebel El Zeit	27°	56'	33°	30'
Gebel Elba	22°	11'	36°	21'
Gebel Hamata	24°	12'	35°	00'
Gebel Katherina	28°	31'	33°	57'
Gebel Maghara	30°	44'	33°	22'
Gebel Musa	28°	32'	33°	59'
Gebel Serbal	28°	39'	33°	39'
Gebel Shellal	22°	01'	36°	31'
Gebel Shendib	22°	01'	36°	15'
Gebel Shendodai	22°	03'	36°	26'
Gebel Um Shomar	28°	22'	33°	55'
Gebel Uweinat	21°	50'	25°	00'
Gemsa Island	27°	39'	33°	36'
Ghanim Island	27°	46'	33°	36'
Ghubbet El Gemsa	27°	39'	33°	32'
Ghubbet El Zeit	27°	53'	33°	31'

Giftun El Kabir Island	27°	14'	33°	55'
Giftun El Saghir Island	27°	12'	33°	58'
Gilf Kebir	23°	27'	26°	00'
Giza	30°	01'	31°	13'
Great Bitter Lake	30°	20'	32°	23'
Gubal El Kabir Island	27°	39'	33°	40'
Gubal El Saghir Island	27°	41'	33°	48'
Gulf of Aqaba (approx.)	28°	45'	34°	45'
Gulf of Suez (approx.)	29°	00'	33°	00'
Halaib	22°	13'	36°	38'
Halaib Island	22°	16'	36°	39'
Hamata	24°	17'	35°	21'
Hurghada	27°	14'	33°	50'
Ilwat El Agramiya	28°	45'	33°	58'
Kharga Oasis (approx.)	25°	26'	30°	33'
Khor Kalabsha	23°	33'	32°	52'
Kom Ombo	24°	28'	32°	57'
Kurkur Oasis	23°	54'	32°	19'
Kurusku	22°	36'	32°	20'
Lake Timsah (approx.)	30°	34'	32°	17'
Lake Bardawil (approx.)	31°	09'	33°	13'
Lake Burullus (approx.)	31°	30'	30°	50'
Lake Idku (approx.)	31°	15'	30°	15'
Lake Manzala (approx.)	31°	15'	32°	05'
Lake Maryut	31°	08'	29°	56'
Lake Nasser (approx.)	23°	20'	32°	45'
Lake Qarun (approx.)	29°	28'	30°	40'
Little Bitter Lake	30°	13'	32°	31'
Luxor	25°	41'	32°	39'
Maghra Oasis	30°	15'	28°	55'
Mahabis Island	24°	19'	35°	23'
Marsa Alam	25°	04'	34°	54'
Marsa Matruh	31°	21'	27°	14'
Maryut	31°	01'	29°	48'
Mikauwa Island	23°	50'	35°	48'
Nabq	28°	04'	34°	25'
Negev	30°	52'	34°	47'
Nekhl	29°	55'	33°	45'
North Qeisum Island	27°	42'	33°	41'
Port Fuad	31°	15'	32°	19'
Port Said	31°	16'	32°	18'
Port Tawfiq	29°	57'	32°	34'
Qasr Qarun	29°	25'	30°	25'
Qattara Depression (approx.)	29°	40'	27°	10'

Qena	26°	10'	32°	43'
Qulân Islands (approx.)	24°	22'	35°	23'
Qusaima	30°	40'	34°	22'
Quseir	26°	06'	34°	17'
Rafah	31°	17'	34°	14'
Ras Banas	23°	54'	35°	48'
Ras El Naqb	29°	36'	34°	51'
Ras Gemsa	27°	39'	35°	33'
Ras Gharib	28°	21'	33°	06'
Ras Mohammed	27°	44'	34°	15'
Ras Zeit	27°	56'	33°	31'
Rawabel Islands (approx.)	22°	25'	36°	32'
Rosetta	31°	24'	30°	25'
Risan Aneiza	30°	56'	33°	38'
Sabkhet Ras Shukheir	28°	08'	33°	14'
Safaga	26°	44'	33°	56'
Safaga Island	26°	45'	33°	59'
Saluga & Ghazal Islands	24°	04'	32°	52'
Salum	31°	34'	25°	09'
Sanafir Island	27°	57'	34°	42'
Shadwan Island	27°	30'	34°	00'
Shalatein	23°	08'	35°	36'
Sharm El Sheikh	27°	51'	34°	17'
Shorat El Manqata	28°	13'	34°	26'
Showarit Island	24°	22'	35°	23'
Siwa Oasis	29°	12'	25°	31'
Siyul Island	24°	23'	35°	23'
Siyal Islands (approx.)	22°	47'	36°	11'
Siyal El Kabir Island	22°	47'	36°	13'
Siyul El Kabir Island	27°	34'	33°	53'
Siyul El Saghir Island	27°	33'	33°	51'
South Qeismus Island	27°	41'	33°	43'
St Katherine Monastery	28°	31'	33°	57'
Suez	29°	58'	32°	33'
Taba	29°	30'	34°	53'
Tawila Island	27°	35'	33°	48'
Tiran Island	27°	56'	34°	33'
Tushka	22°	31'	31°	52'
Um Basian Island	27°	38'	33°	47'
Um El Heimat El Kabir Island	27°	42'	33°	38'
Um El Heimat El Saghir Island	27°	38'	33°	40'
Um El Kiman Island	27°	50'	33°	35'
Um Gawish El Kabir Island	27°	10'	33°	53'
Um Gawish El Saghir Island	27°	09'	33°	51'

Um Ladid Island	24°	19'	35°	24'
Um Qamar Island	27°	21'	33°	54'
Wadi Aideib	22°	15'	36°	26'
Wadi Akwamtra	22°	13'	36°	18'
Wadi Araba (approx.)	30°	18'	35°	13'
Wadi Digla	29°	58'	31°	18'
Wadi El Allaqi (approx.)	23°	08'	32°	46'
Wadi El Arbain	28°	32'	33°	57'
Wadi El Arish	31°	03'	33°	50'
Wadi El Asyuti	27°	25'	31°	30'
Wadi El Beida	29°	55'	34°	42'
Wadi El Natrun (approx.)	30°	25'	30°	13'
Wadi El Rayan (approx.)	29°	05'	30°	20'
Wadi Feiran (approx.)	28°	45'	33°	25'
Wadi Gerafi	29°	56'	34°	40'
Wadi Gimal Island	24°	40'	35°	10'
Wadi Hibran	28°	31'	33°	42'
Wadi Isla	28°	10'	33°	50'
Wadi Hodein (approx.)	23°	04'	35°	20'
Wadi Naam (approx.)	23°	18'	34°	59'
Wadi Nasb	28°	31'	34°	14'
Wadi Kid	28°	07'	34°	30'
Wadi Sannur	28°	59'	31°	03'
Wadi Serimtai	22°	12'	36°	28'
Wadi Taba	29°	32'	34°	52'
Wadi Tamarani	29°	50'	34°	30'
Wadi Zaghra	28°	40'	34°	20'
Zabargad Island	23°	37'	36°	12'
Zaranik	31°	08'	33°	28'

APPENDIX C: ENGLISH & SCIENTIFIC NAMES OF FAUNA MENTIONED IN TEXT

BIRDS

Ostrich	<i>Struthio camelus</i>
Little Grebe	<i>Tachybaptus ruficollis</i>
Great Crested Grebe	<i>Podiceps cristatus</i>
Black-necked Grebe	<i>Podiceps nigricollis</i>
Cory's Shearwater	<i>Calonectris diomedea</i>
Yelkouan Shearwater	<i>Puffinus yelkouan</i>
Red-billed Tropicbird	<i>Phaethon aethereus</i>
White Pelican	<i>Pelecanus onocrotalus</i>
Pink-backed Pelican	<i>Pelecanus rufescens</i>
Dalmatian Pelican	<i>Pelecanus crispus</i>
Brown Booby	<i>Sula leucogaster</i>
White-breasted Cormorant	<i>Phalacrocorax carbo</i>
Shag	<i>Phalacrocorax aristotelis</i>
Little Egret	<i>Egretta garzetta</i>
Reef Heron	<i>Egretta gularis</i>
Grey Heron	<i>Ardea cinerea</i>
Goliath Heron	<i>Ardea goliath</i>
Purple Heron	<i>Ardea purpurea</i>
Great White Egret	<i>Casmerodius albus</i>
Cattle Egret	<i>Bubulcus ibis</i>
Common Squacco Heron	<i>Ardeola ralloides</i>
Green-backed Heron	<i>Butorides striatus</i>
Black-crowned Night Heron	<i>Nycticorax nycticorax</i>
Little Bittern	<i>Ixobrychus minutus</i>
Yellow-billed Stork	<i>Mycteria ibis</i>
Black Stork	<i>Ciconia nigra</i>
White Stork	<i>Ciconia ciconia</i>
Glossy Ibis	<i>Plegadis falcinellus</i>
Sacred Ibis	<i>Threskiornis aethiopicus</i>
European Spoonbill	<i>Platalea leucorodia</i>
Greater Flamingo	<i>Phoenicopterus ruber</i>
White-headed Duck	<i>Oxyura leucocephala</i>
Egyptian Goose	<i>Alopochen aegyptiacus</i>
Ruddy Shelduck	<i>Tadorna ferruginea</i>
Shelduck	<i>Tadorna tadorna</i>
Gadwall	<i>Anas strepera</i>
Wigeon	<i>Anas penelope</i>
Mallard	<i>Anas platyrhynchos</i>
Northern Shoveler	<i>Anas clypeata</i>
Pintail	<i>Anas acuta</i>

Garganey
 Teal
 Marbled Teal
 Red-crested Pochard
 Northern Pochard
 Ferruginous Duck
 Tufted Duck
 Red-breasted merganser
 Honey Buzzard
 Black-shouldered Kite
 Black Kite
 Lammergeyer
 Egyptian Vulture
 Eurasian Griffon
 Black Vulture
 Lappet-faced Vulture
 Short-toed Eagle
 Bateleur
 Pallid Harrier
 Levant Sparrowhawk
 Steppe Buzzard
 Lesser Spotted Eagle
 Greater Spotted Eagle
 Steppe Eagle
 Imperial Eagle
 Golden Eagle
 Verreaux's Eagle
 Bonelli's Eagle
 Booted Eagle
 Osprey
 Lesser Kestrel
 Common Kestrel
 Sooty Falcon
 Lanner Falcon
 Saker Falcon
 Peregrine Falcon
 Barbary Falcon
 Sand Partridge
 Chukar Partridge
 Barbary Partridge
 Common Quail
 Common Crane
 Corncrake
 Purple Gallinule
 Moorhen
 European Coot
 Little Bustard

Anas querquedula
Anas crecca
Marmaronetta angustirostris
Netta rufina
Aythya ferina
Aythya nyroca
Aythya fuligula
Mergus serrator
Pernis apivorus
Elanus caeruleus
Milvus migrans
Gypaetus barbatus
Neophron percnopterus
Gyps fulvus
Aegypius monachus
Torgos tracheliotus
Circetus gallicus
Terathopus ecaudatus
Circus macrourus
Accipiter brevipes
Buteo buteo
Aquila pomarina
Aquila clanga
Aquila nipalensis
Aquila heliaca
Aquila chrysaetos
Aquila verreauxii
Hieraaetus fasciatus
Hieraaetus pennatus
Pandion haliaetus
Falco naumanni
Falco tinnunculus
Falco concolor
Falco biarmicus
Falco cherrug
Falco peregrinus
Falco peregrinoides
Ammoperdix heyi
Alectoris chukar
Alectoris barbara
Coturnix coturnix
Grus grus
Crex crex
Porphyrio porphyrio
Gallinula chloropus
Fulica atra
Tetrax tetrax

Houbara Bustard
 Painted Snipe
 European Oystercatcher
 Golden Plover
 Grey Plover
 Ringed Plover
 Little Ringed Plover
 Kittlitz's Plover
 Kentish Plover
 Sand Plover
 Caspian Plover
 Dotterel
 Lapwing
 Spur-winged Plover
 Sociable Lapwing
 White-tailed Plover
 Great Snipe
 Common Snipe
 Jack Snipe
 Black-tailed Godwit
 Bar-tailed Godwit
 Whimbrel
 Slender-billed Curlew
 Curlew
 Spotted Redshank
 Redshank
 Marsh Sandpiper
 Greenshank
 Green Sandpiper
 Wood Sandpiper
 Terek Sandpiper
 Common Sandpiper
 Turnstone
 Sanderling
 Little Stint
 Temminck's Stint
 Dunlin
 Curlew Sandpiper
 Broad-billed Sandpiper
 Ruff
 Black-winged Stilt
 Avocet
 Crab Plover
 Senegal Thick-knee
 Cream-colored Courser
 Common Pratincole
 Black-winged Pratincole

Chlamydotis undulata
Rostratula benghalensis
Haematopus ostralegus
Pluvialis apricaria
Pluvialis squatarola
Charadrius hiaticula
Charadrius dubius
Charadrius pecuarius
Charadrius alexandrinus
Charadrius leschenaultii
Charadrius asiaticus
Charadrius morinellus
Vanellus vanellus
Vanellus spinosus
Vanellus gregarius
Vanellus leucurus
Gallinago media
Gallinago gallinago
Lymnocyrtus minimus
Limosa limosa
Limosa lapponica
Numenius phaeopus
Numenius tenuirostris
Numenius arquata
Tringa erythropus
Tringa totanus
Tringa stagnatilis
Tringa nebularia
Tringa ochropus
Tringa glareola
Tringa cinerea
Tringa hypoleucos
Arenaria interpres
Calidris alba
Calidris minuta
Calidris temminckii
Calidris alpina
Calidris ferruginea
Limicola falcinellus
Philomachus pugnax
Himantopus himantopus
Recurvirostra avosetta
Dromas ardeola
Burhinus senegalensis
Cursorius cursor
Glareola pratincola
Glareola nordmanni

White-eyed Gull
 Hemprich's Gull
 Common Gull
 Audouin's Gull
 Yellow-legged Gull
 Armenian Gull
 Lesser Black-backed Gull
 Great Black-headed Gull
 Black-headed Gull
 Slender-billed Gull
 Mediterranean Gull
 Little Gull
 Gull-billed Tern
 Caspian Tern
 Lesser Crested Tern
 Swift Tern
 Sandwich Tern
 Common Tern
 Little Tern
 White-cheeked Tern
 Bridled Tern
 Whiskered Tern
 White-winged Tern
 Black Tern
 African Skimmer
 Pin-tailed Sandgrouse
 Spotted Sandgrouse
 Black-bellied Sandgrouse
 Crowned Sandgrouse
 Lichtenstein's Sandgrouse
 Laughing Dove
 Namaqua Dove
 Rose-grey Dove
 Senegal Coucal
 Barn Owl
 Pharaoh Eagle-owl
 Hume's Tawny Owl
 Egyptian Nightjar
 Nubian Nightjar
 Pied Kingfisher
 European Bee-eater
 Hoopoe
 Syrian Woodpecker
 Black-crowned Sparrow-Lark
 Bar-tailed Lark
 Desert Lark
 Hoopoe Lark

Larus leucophthalmus
Larus hemprichii
Larus canus
Larus audouinii
Larus cachinnans
Larus armenicus
Larus fuscus
Larus ichthyaetus
Larus ridibundus
Larus genei
Larus melanocephalus
Larus minutus
Sterna nilotica
Sterna caspia
Sterna benghalensis
Sterna bergii
Sterna sandvicensis
Sterna hirundo
Sterna albifrons
Sterna repressa
Sterna anaethetus
Chlidonias hybridus
Chlidonias leucopterus
Chlidonias niger
Rynchops flavirostris
Pterocles alchata
Pterocles senegallus
Pterocles orientalis
Pterocles coronatus
Pterocles lichtensteinii
Streptopelia senegalensis
Oena capensis
Streptopelia rose ohrisea
Centropus senegalensis
Tyto alba
Bubo ascalaphus
Strix butleri
Caprimulgus aegyptius
Caprimulgus nubicus
Ceryle rudis
Merops apiaster
Upupa epops
Dendrocopos syriacus
Eremopterix nigriceps
Ammomanes cincturus
Ammomanes deserti
Alaemon alaudipes

Thick-billed Lark	<i>Ramphocoris clotbey</i>
Short-toed Lark	<i>Calandrella brachydactyla</i>
Lesser Short-toed Lark	<i>Calandrella rufescens</i>
Dunn's Lark	<i>Eremalauda dunni</i>
Dupont's Lark	<i>Chersophilus duponti</i>
Temminck's Horned Lark	<i>Eremophila bilopha</i>
European Sand Martin	<i>Riparia riparia</i>
Pale Crag Martin	<i>Hirundo obsoleta</i>
Barn Swallow	<i>Hirundo rustica</i>
African Pied Wagtail	<i>Motacilla aguimp</i>
Yellow Wagtail	<i>Motacilla flava</i>
Garden Bulbul	<i>Pycnonotus barbatus</i>
Yellow-vented Bulbul	<i>Pycnonotus xanthopygos</i>
Long-billed Pipit	<i>Anthus similis</i>
Rosy-patched Shrike	<i>Rhodophoneus cruentus</i>
White-crowned Black Wheatear	<i>Oenanthe leucopyga</i>
Hooded Wheatear	<i>Oenanthe monacha</i>
Mourning Wheatear	<i>Oenanthe lugens</i>
Red-rumped Wheatear	<i>Oenanthe moesta</i>
Desert Wheatear	<i>Oenanthe deserti</i>
Blackstart	<i>Cercomela melanura</i>
Arabian Babbler	<i>Turdoides squamiceps</i>
Fulvous Babbler	<i>Turdoides fulvus</i>
Scrub Warbler	<i>Scotocerca inquieta</i>
Graceful Prinia	<i>Prinia gracilis</i>
Clamorous Reed Warbler	<i>Acrocephalus stentoreus</i>
Olivaceous Warbler	<i>Hippolais pallida</i>
Red Sea Warbler	<i>Sylvia leucomelaena</i>
Sardinian Warbler	<i>Sylvia melanocephala</i>
Great Tit	<i>Parus major</i>
Shining Sunbird	<i>Nectarinia habessinica</i>
Cinereous Bunting	<i>Emberiza cineracea</i>
European Goldfinch	<i>Carduelis carduelis</i>
Trumpeter Finch	<i>Rhodopechys githaginea</i>
Sinai Rosefinch	<i>Carpodacus synoicus</i>
Warbling Silverbill	<i>Lonchura cantans</i>
House Sparrow	<i>Passer domesticus</i>
Desert Sparrow	<i>Passer simplex</i>
Sudan Golden Sparrow	<i>Passer luteus</i>
Tristram's Grackle	<i>Onychognathus tristramii</i>
Carrion Crow	<i>Corvus corone</i>
Brown-necked Raven	<i>Corvus ruficollis</i>
Fan-tailed Raven	<i>Corvus rhipidurus</i>

MAMMALS

Flower's Shrew
 Wolf
 Blanford's Fox
 Rüppell's Sand Fox
 Fennec Fox
 Swamp Cat
 Leopard
 Striped Hyena
 Dugong
 Hyrax
 Dorcas Gazelle
 Slender-horned Gazelle
 Barbary Sheep
 Nubian Ibex
 Four-toed Jerboa
 Greater Jerboa
 Flower's Gerbil
 Dormouse
 Porcupine

Crocidura floweri
Canis lupus
Vulpes cana
Vulpes rueppelli
Vulpes zerda
Felis chaus
Panthera pardus
Hyaena hyaena
Dugong dugon
Procavia capensis
Gazella dorcas
Gazella leptoceros
Ammotragus lervia
Capra nubiana
Allactaga tetradactyla
Jaculus orientalis
Gerbillus floweri
Eliomys melanurus
Hystrix indica

REPTILES

Savigny's Agama
 Egyptian Dab Lizard
 Ocellated Dab Lizard
 Gebel Elba Snake-eyed Lizard
 Grass-loving Lizard
 Nile Monitor
 Sinai Banded Snake
 Hoogstraal's Cat Snake
 Innes' Cobra
 Nile Crocodile
 Egyptian Tortoise
 Green Turtle
 Hawksbill Turtle
 Loggerhead Turtle
 Leatherback Turtle
 Nile Soft-shelled Turtle

Trapelus savignii
Uromastix aegyptia
Uromastix ocellata
Ophisops elbaensis
Philochortus zolli
Varanus niloticus
Coluber sinai
Telescopus hoogstraali
Walterinnesia aegyptia
Crocodylus niloticus
Testudo kleinmanni
Chelonia mydas
Eretmochelys imbricata
Caretta caretta
Dermochelys coriacea
Trionyx triunguis

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BIRDLIFE INTERNATIONAL is the leading non-governmental organization working worldwide to conserve birds and their habitats. The Directory of Important Bird Areas in Egypt is part of a BirdLife initiative to document the most important locations for birds around the globe. A total of 34 sites have been identified in Egypt that fulfill the Important Bird Area (IBA) criteria. Egypt's IBAs comprise a wide range of critical habitats: wetlands, high altitude mountains, desert wadis, coastal plains and marine islands. IBAs are often indicators of areas of high biodiversity and contain rare and endangered species.

This document is a valuable reference for experts and laymen alike, providing practical information for setting conservation priorities, devising management programs and conducting environmental impact assessments. Through the IBA Programme, it is hoped to contribute to the lasting conservation of these critical sites vital to the future of birds, biodiversity and humankind.

المنظمة الدولية لحماية الطيور (BirdLife International) هي منظمة غير حكومية تعمل فى جميع أرجاء العالم لصيانة الطيور وبيئاتها الطبيعية. إن دليل المناطق ذات الأهمية للطيور فى مصر هو جزء من مبادرة المنظمة الدولية لحماية الطيور لتحديد أكثر المناطق والبيئات أهمية للطيور على مستوى العالم. لقد تم تحديد ٣٤ منطقة ذات أهمية للطيور فى مصر، تم اختيارها طبقا لقواعد ومعايير دولية وضعتها المنظمة الدولية لحماية الطيور. وتضم المناطق ذات الأهمية للطيور فى مصر بيئات مختلفة منها الأراضى الرطبة، والجبال المرتفعة، والأودية الصحراوية، والسهول الساحلية، والجزر البحرية.

إن المناطق ذات الأهمية للطيور كثيرا ما تحوى مواقع غنية فى أنواع الكائنات الأخرى وخاصة الأنواع النادرة والمهددة بخطر الإنقراض، وعلى هذا فهى مؤشر جيد لأهم مواقع التنوع البيولوجى فى البلاد. إن هذا العمل مرجع للخبراء والعامة على السواء يقدم معلومات هامة لوضع أولويات الحماية، صياغة خطط الإدارة البيئية والقيام بدراسات التقييم البيئى. والمأمول أن يشجع برنامج المناطق ذات الأهمية للطيور على صيانة تلك المواقع المتميزة والعمل على إستغلالها المستدام، حتى يمكن للأجيال القادمة الإستمرار فى الإستفادة منها والتمتع بها.